THE OIL WEEKLY

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PUBLISHED BY

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HOUSTON, TEXAS

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Member Audit Bureau of Circulation
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NEW YORK.....250 Park Ave.
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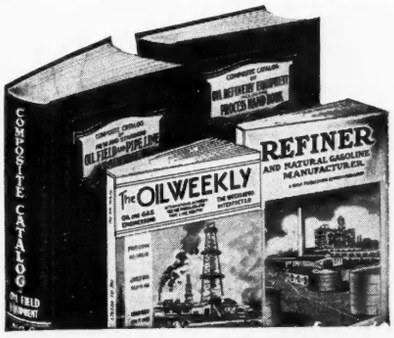

SPECIALIZED OIL JOURNALS
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The Oil Man's Calendar

SEPT. 4- 8	American Society of Mechanical Engineers, New York.
5	Oil Workers International Union, Hammond, Ind.
11-15	American Chemical Society, Boston, Mass.
13-15	National Petroleum Association, Atlantic City, N. J.
27-28	West Virginia Oil & Natural Gas Association, Charleston, W. Va.
OCT. 5- 7	American Institute of Mining & Metallurgical Engineers, Petroleum Division, Galveston, Texas.
5- 7	Texas Mid-Continent Oil & Gas Association, Houston, Texas.
9-10	American Gas Association Annual Convention, New York.
16-20	National Safety Congress, Atlantic City, N. J.
17	National Stripper Well Association, Fort Worth, Texas.
18-20	Independent Petroleum Association of America, Fort Worth, Texas.
19-20	A. I. M. E. Petroleum Division, Los Angeles.
NOV. 13-17	American Petroleum Institute, Stevens Hotel, Chicago.
15-17	American Institute of Chemical Engineers, Providence, R. I.
DEC. 4- 7	American Society of Mechanical Engineers, Philadelphia.
APR. 10-12	American Association of Petroleum Geologists, Chicago.
11-12	American Petroleum Institute, Eastern District, Division of Production, Columbus, Ohio.

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Published every Monday. Single Copies 15 cents (Special Issues 50c). Subscription price: domestic and foreign, $2.00 a year; 2 years $3.00. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879. Subscription restricted to those engaged in the producing and pipe line branches of the oil industry or the manufacturing and distribution of oil field supplies. Advertising rates on application.

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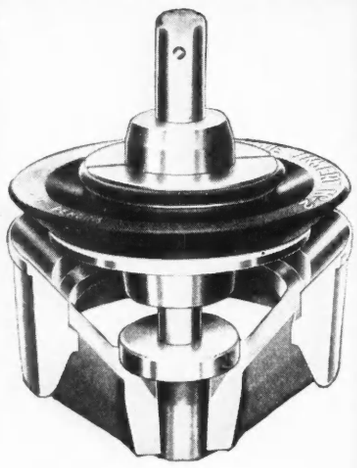

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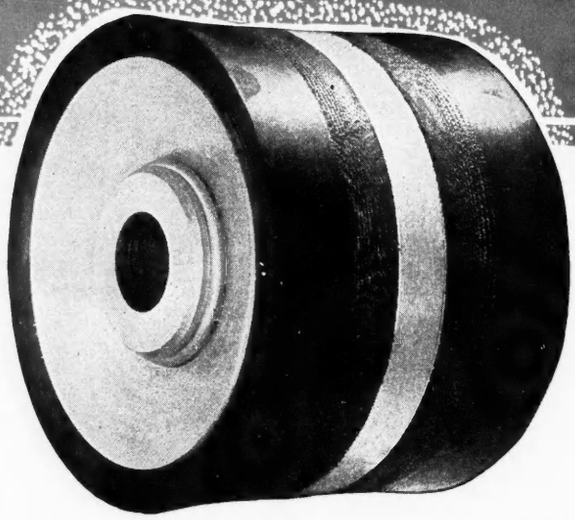

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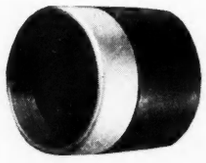

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THE OIL WEEKLY

AUGUST 28, 1939

VOLUME 94 NUMBER 12

The Week's Panorama

ALTHOUGH the recent crude price reductions and Mid-Continent oil field shutdowns are momentous occurrences, they are not the first occasion for upset equilibrium in the industry. As the industry celebrates its 80th anniversary of birth this week, it is interesting and also hopeful to review its many ups and downs of the past, the majority of which have been forgotten today.

80 Years Old . . . . . .

Still relatively young, in comparison with some other industries, but grown up to exceptional stature and proportions, the oil industry reached its eightieth birthday on Sunday, August 27.

A towering giant has developed from the industrial infant that was born in Pennsylvania on Sunday, August 27, 1859, with the finding of oil in the Drake well.

Scarcity and high cost of whale oil for illumination had led to substitution of crude petroleum and development of petroleum deposits in Roumania, Italy, Poland, and Russia as early as 1800 to 1850.

Increasing demand for oils for lighting led to efforts in the United States around 1850 to establish commercial production of crude petroleum. Finally such production was developed in 1859 and with it the establishment of the modern petroleum industry, when the first well was drilled purposely for crude oil by Colonel Drake.

Kerosene was the main product of the industry from 1859 to 1914. But then came the caravan of automobiles and the rising up of gasoline as the cream in a barrel of crude oil.

Overproduction Nearly 80

United States crude oil production amounted to 2000 barrels in 1859—and oil really was handled and measured in barrels in those days. The output was not large, but prices were good, having averaged $20 a barrel for the year. In 1860 production rose to 500,000 barrels, and the price dropped to $9.60 a barrel.

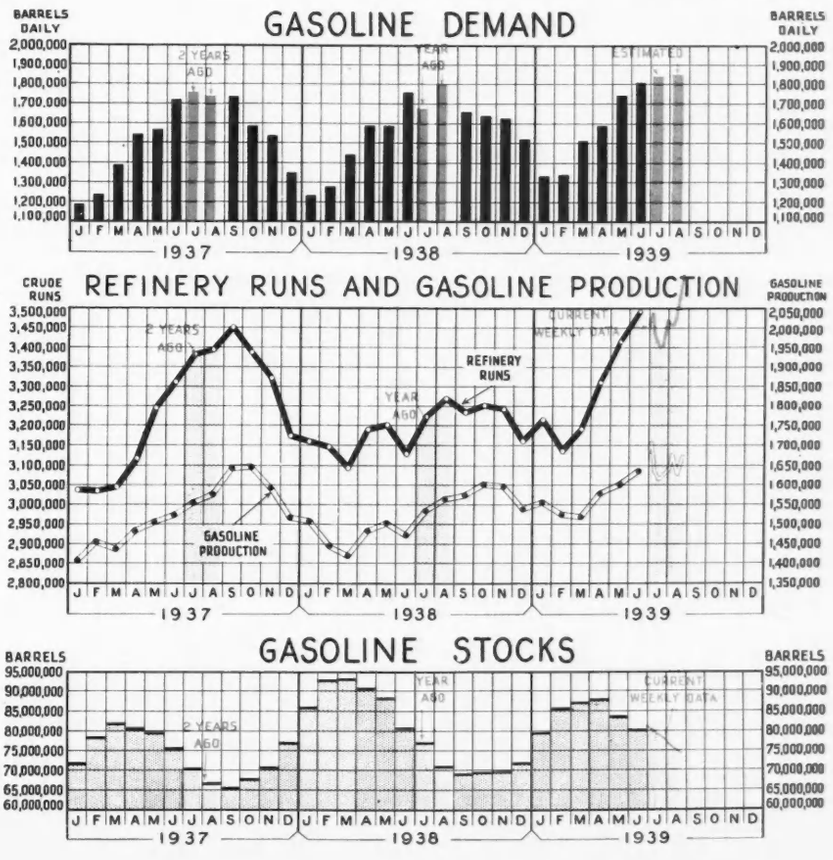
Then came the industry's first over-production in 1861, when the wells turned out 2,113,609 barrels of crude, at prices averaging 52 cents a barrel. Thus the problem of over-production, which currently plagues the industry, is practically as old as the industry itself.

Crude Prices: $20; 51c . .

Crude oil prices fluctuated widely in the first decade of the industry's history, but since dropping from $3.75 a barrel in 1872 to $1.80 in 1873, the average price has been above $3 a barrel in only one year, 1920. The lowest average price in the history of the industry was

Gasoline Stocks Cut Despite Larger Output

Storage reduced 1,121,000 barrels in week ended August 19, although all-time peak refinery runs caused increase in production.



that of 51 cents a barrel in 1892. And not far above that record low were the prices of 61 cents in 1931 and 67 cents in 1933.

In the 80 years since the industry was established, the average price of crude has been $1.20 a barrel.

The average price was $1.15 a barrel in 1938, although postings were cut to an average of about 98 cents a barrel late in the year. From that 98-cent level, the prices were cut further to an average of about 80 cents in the recent reductions.

Up and down the price goes, and where it will stop nobody knows . . . although nearly everybody wonders where it will be after the present-day shutdowns.

Price Situation Unsettled . .

Major purchasers in the Mid-Continent probably will want to wait, however, and observe the markets again under normal conditions before taking any further action on crude prices.

The gasoline market has improved, and demand for crude has been urgent for some refiners under the shutdowns. But the markets are artificial, and only when the closings are over will prices seek their proper levels.

Strict Control Looms . . .

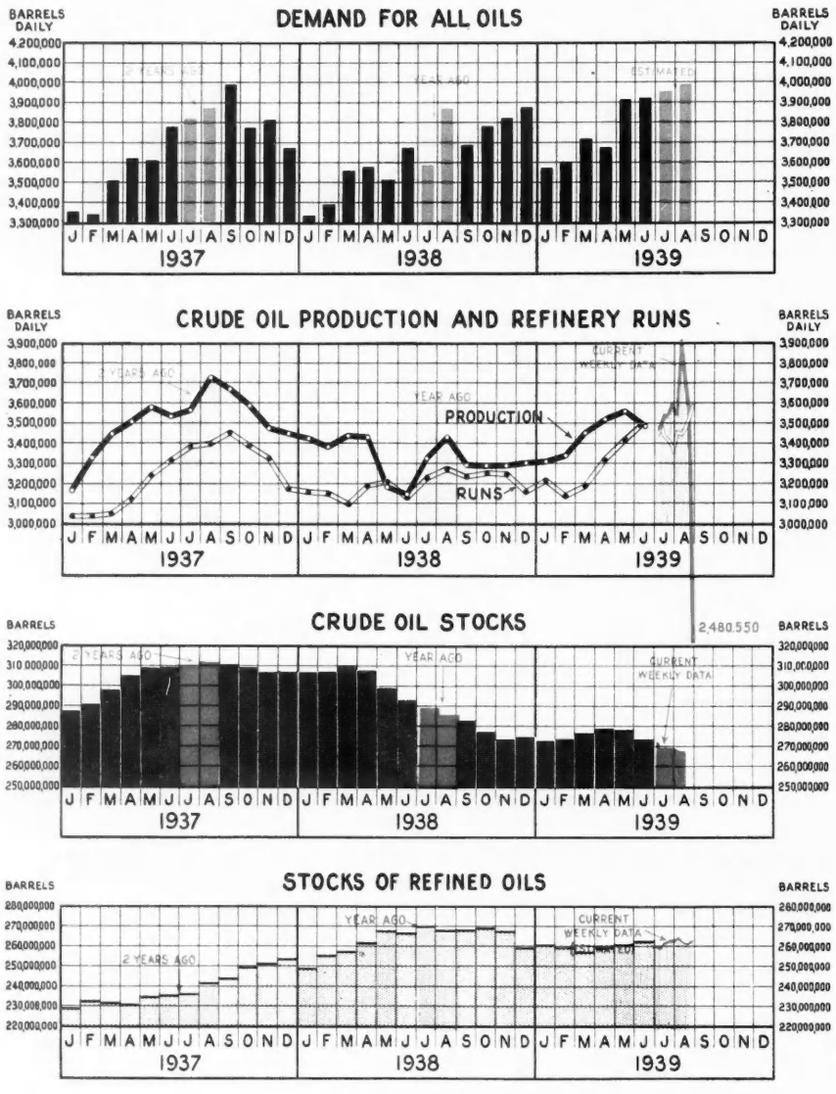
The conservation officials of the Mid-Continent states have indicated, meanwhile, that they will not limit their market-stabilization efforts to the 15-day shutdowns.

It is virtually certain that production will be generally resumed after termination of the 15-day closings.

But September allowables are expected to be exceptionally strict —perhaps to the extent of forcing further substantial withdrawals of crude from storage.

Shutdowns Force Production Down Violently

Crude output declines within two weeks from all-time high to lowest level since East Texas shutdowns in 1931, 1932, and 1933.



States Plan Allowables . . .

California will retain in September the allowable of 598,300 barrels daily that prevailed in August. The allowable is about the same as the 596,000-barrel Bureau of Mines estimate of demand for September. California's new proration law is due to become effective in September, unless derailed by referendum.

Louisiana conservation officials have ordered a further reduction of 6127 barrels in that state's allowable for September, to 235,475 barrels daily, as compared with the Bureau of Mines estimate of 255,700 barrels daily as the demand for Louisiana crude during the month. Louisiana's August allowable was 22,561 barrels lower than the July allowable; and moreover, the state joined in the Mid-Continent shutdowns in the latter half of August.

Oklahoma may further tighten up on allowables in September, when the officials consider a new order in the hearing August 29.

Kansas has been adhering closely to the Bureau of Mines estimates of demand.

New Mexico has left the way open for continuing shutdowns if advisable, but probably will open up if other states do so. The New Mexico allowables regularly conform closely with indicated market demand.

Texas in Spotlight . . . .

Texas undoubtedly will have comparatively strict allowables in September, although some important re-allocations of the state total among districts and fields may occur, in consequence of reports of under-market selling and buying of crude in several districts of the state. The Texas Railroad Commission will go exhaustively into the market and inventory situation at its important hearing at Austin August 28.

At that meeting, officials of most of the major companies will be asked for information on inventories and stocks of crude oil and gasoline.

Adjustable Drilling Rig Platform Has Advantages

AN adjustable floor which may be leveled to the height of any drilling floor and engine foundation is being used by Sikes Drilling Company in Archer County, Texas. The adjustment is obtained by using pipe supports instead of the blocking of timbers ordinarily found at such locations. An all-steel canopy is used in conjunction with this adjustable feature, which covers the draw works and the power engines.

Sections of discarded drill pipe are used to obtain the required adjustment. These have heavy plates welded to one end to secure a substantial footing which rests upon the ground surface. The sections may be any length that can be easily moved, and made of any size pipe. Companion sections of pipe which will slide into the first sections have flat plates welded on one end, with 1-inch dowels extending above the plates to slip through holes in the floor sills to prevent movement when in position. The second pipe sections are drilled with holes spaced regularly about 2 inches apart, through which pins may be placed, after the sections are in place, to form a rest between the two sections.

The derrick is erected and the usual foundation skids or timbers installed to support the drilling machinery. As the steel canopy, or roof of the unit is in sections, easily torn down and erected, the adjustable foundation piers are placed at the required points and the sills placed thereon. Leveling is obtained quickly by placing the pins through the holes which will bring the sills of the proper relation between the derrick floor and the engine bases. With bolts, the studs of the canopy are quickly placed in position and the roof raised. Steel plates cut to fit exactly at various places around the engines and against the derrick floor level, make a platform floor that is pinned down to keep movement to a minimum. The adjustable posts may be placed at any point around the all-steel canopy that may be required to support the weight of auxiliary machinery needed for drilling, and that is operated conveniently near the power engines. As all parts are cut, welded and shaped to fit the particular drilling rig, tearing down, moving and setting up is facilitated. Being all steel, fire hazard is reduced, and by using skid-proof floor plates, danger of slipping by workers is reduced.

Earnings Sharply Curtailed

By L. J. LOGAN, Associate Editor

ALTHOUGH it is hazardous to make any definite estimates of oil company earnings for the third and fourth quarters of this year, because of the prevailing uncertainties in the industry, it appears likely that earnings for 1939 will be only one half to two thirds as large as those of 1938.

And inasmuch as 1938 profits were close to the average for the 13 years from 1926 through 1938, it is indicated that this year will prove to be considerably subnormal from the standpoint of earnings in the industry.

If oil company profits for 1939 should be down as much as 50 percent under those of 1938, they would be about the same as in 1934, a relatively poor year. The profits could not decline more than about 20 percent under the 1938 levels without falling short of the 1935 earnings, and a decline of more than 20 percent appears virtually certain.

Lower Prices Responsible

The less favorable showing this year than last year has been due primarily to lower prices of both crude and refined oils, as volumes of business have been better.

The opportunity for profit has been further circumscribed lately, moreover, by the new general reductions of crude oil prices in the Mid-Continent.

The shut-downs of the Mid-Continent oil fields for 15 days have given some promise of improvement in the markets; but it remains to be seen what prices of both crude and refined oils will be during the remainder of the year. Consequently, the outlook for oil company earnings in the third and fourth quarters is heavily clouded, and any unequivocal estimates of profits in those periods are not feasible.

Outlook Not Promising

However, it is indicated at present that in the third and fourth quarters of 1939, oil company profits will lag as far under 1938 levels as they did in the first and second quarters, and probably farther.

In the first two quarters, crude prices were lower this year than last year by the amount of the October, 1938, reduction of about 15 percent. In the early part of the third quarter, similarly, the crude postings were down about 15 percent. But the Mid-Continent reductions of about 20 cents a barrel on August 10-11, if not revoked, will make postings 30 to 40 cents a barrel lower for the latter part of the third quarter than in the corresponding weeks last year. Thus average prices of crude will be down as much or more from a year previously in the third quarter than in the first and second quarters.

Similarly, crude prices in the final quarter of this year would be no better than those in the last quarter of 1938 even if the recent reductions were rescinded; and if the lower postings are maintained, average prices for the final quarter will be lower this year than last year.

Lower prices this year are only partially compensated, meanwhile, by increased volumes of business, afforded by the gain of better than 6 percent in total demand for petroleum.

First 6 Months

A tabulation of the earnings of 35 oil companies, presented herewith, has revealed that the combined net profits of those concerns were 37.7 percent lower in the first six months of this year than in the corresponding months last year.

The group is well representative of the industry as a whole, as it includes both integrated and non-integrated companies and concerns operating in all sections of the United States.

As in the past several years, relatively better showings were made by the producing companies than by integrated concerns in the first half of this year.

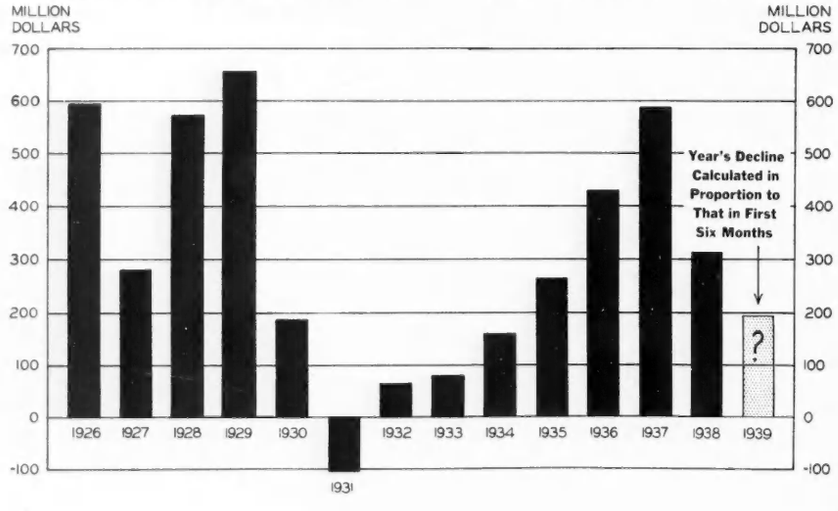
Producing Companies

Among the producing companies, several did materially better than the average for the industry. Wilcox Oil & Gas Company showed 36.1 percent more profit for the first six months of this year than for the similar period last year. Earnings for the half year were lower for Plymouth Oil Company, but only to the extent of 11.7 percent; and Seaboard Oil Company showed merely a 12.2 percent decrease.

Other declines in profits that

Oil Company Earnings Down Further in 1939 Following Sharp Drop in 1938

Chart is based on net profits and losses of 44 American oil companies



were smaller than the average for the industry included those of 17 percent for Texas Pacific Coal & Oil Company, 23.6 percent for Amerada Corporation, 18.1 percent for Sunray Oil Corporation, 26.6 percent for Texas Gulf Producing Company. Although Continental Oil Company is an integrated concern, it is particularly strong in production, and showed a decline of only 17.8 percent in earnings for the six months.

Producing companies that showed reductions in earnings as great as those for the industry as a whole, or greater, included Houston Oil Company, off 37.3 percent; Barnsdall Oil Company, down 37.4 percent; Louisiana Land & Exploration Company, down 45.4 percent; and Ohio Oil Company, which reported a net loss of $142,559, against a profit of $2,683,516 in the first half of 1938.

Integrated Companies

Although the integrated companies as a group made comparatively poor showings, several did well. Pure Oil Company made 20.4 percent more profit in the first six months of 1939 than in the similar period of 1938, apparently in reflection of its development of important production in Illinois, located advantageously with relation to the company's refining and marketing facilities in the Middle West.

Richfield Oil Corporation earned 19.1 percent more first half profit in 1939 than in 1938.

Standard Oil Company of Indiana and Socony-Vacuum Oil Company each reported only about 15 percent smaller first half profits. Like Pure Oil, they were able to benefit from the Illinois development.

Declines of 38 percent each for Sun Oil Company and Mid-Continent Petroleum Corporation were practically the same as the average decrease for the industry; and also near the industry average were those of 40.8 percent for Skelly Oil Company, 43.2 percent for Phillips Petroleum Company, 44.4 percent for The Texas Corporation, and 45.1 percent for Union Oil Company of California.

Decreases of over 50 percent from the earnings in the initial half of last year included those of 52.8 percent for Atlantic Refining Company, 53.8 percent for Standard Oil Company of California, 61.2 percent for Tide Water Associated Oil Company, 63 percent for Shell Union Oil Corporation, 63.9 percent for Lion Oil Refining Company, 98.9 percent for Darby Petroleum Corporation.

Consolidated Oil Corporation, which through its subsidiary Sinclair Prairie initiated the recent crude price cuts, experienced the outstanding unfavorable record, having reported a loss of $872,671 for the first six months of 1939, in contrast with a net profit of $4,000,341 in the corresponding months of 1938. The company apparently was handicapped by competition in the Middle West offered by refiners and marketers with better access to flush oil in Illinois.

First Quarter Poor

Although the industry as a whole earned about 35 percent less in the first six months of 1939 than in the corresponding months of 1938, it did better than that in the second quarter, having partially compensated in that period for a particularly poor record in the first quarter. Available reports indicated that in the first three months of this year, oil companies in the aggregate earned about 60 percent less than in the corresponding months last year.

Second Quarter Better

The accompanying table shows, in contrast, that in the three months ended June 30, 1939, net profits of 26 oil companies were only 37.6 percent smaller than in the similar period of 1938. Those 26 companies showed for the full first half of this year 46.2 percent less profit than in the corresponding period last year, because of their relatively poor first quarter records.

The improvement in earnings in the second quarter of this year reflected primarily the substantial recovery during that period of the prices of gasoline, principal revenue producing product of the industry.

Net Profits of 35 Oil Companies for Second Quarter and First Half of 1939 and 1938

After all deductions, including interest, depreciation, depletion, amortization, federal taxes, minority interest, etc.

COMPANY	QUARTER ENDED JUNE 30			FIRST SIX MONTHS		
	1938	1939	Percent Change	1938	1939	Percent Change
First Group—						
Amerada Corp.	$448,172	$355,228	— 20.7	$883,061	$674,989	— 23.6
Atlantic Refining Co.	818,000	815,000	— 0.4	2,866,327	1,353,000	— 52.8
Barnsdall Oil Co.	766,242	492,622	— 35.8	1,690,039	1,058,039	— 37.4
Continental Oil Co.	1,281,510	2,069,280	+ 61.6	3,086,707	2,537,280	— 17.8
Houston Oil Co.	358,052	24,065	— 93.7	841,535	527,507	— 37.3
Lion Oil Refining Co.	294,068	226,997	— 23.1	595,000	†215,178	— 63.9
Louisiana Land & Exploration Co.	318,000	192,823	— 39.6	771,000	420,966	— 45.4
Mid-Continent Petroleum Corp.	574,264	678,793	+ 18.1	1,042,574	640,836	— 38.6
Mission Corp.	200,383	§250,000	+ 25.0	427,386	466,913	+ 15.9
Ohio Oil Co.	1,391,368	154,993	— 88.9	2,683,516	*142,559	—105.3
Pacific Western Oil Corp.	838,484	315,133	— 61.7	1,037,682	462,669	— 55.4
Panhandle Producing & Refining Co.	7,400	21,201	+343.0	16,254	‡9,600	+ 31.2
Phillips Petroleum Co.	3,270,497	2,288,536	— 30.0	5,585,139	3,744,069	— 43.2
Plymouth Oil Co.	625,288	552,941	— 11.7	1,328,120	1,172,704	— 11.7
Quaker State Oil Refining Corp.	*259,851	277,584	+	*158,379	554,790	+ ....
Seaboard Oil Co.	437,157	384,380	— 12.1	893,886	785,431	— 12.2
Shell Union Oil Corp.	2,922,990	1,684,156	— 42.2	5,830,437	2,162,422	— 63.0
Skelly Oil Co.	613,471	517,838	— 14.8	1,278,241	756,918	— 40.8
Standard Oil Co. of California.	8,282,949	3,891,587	— 53.6	15,413,435	7,117,604	— 53.8
Sunray Oil Corp.	232,243	194,205	— 16.3	426,654	349,413	— 18.1
Tide Water Associated Oil Co.	2,742,441	1,097,228	— 60.0	5,992,705	2,331,410	— 61.2
Texas Gulf Producing Co.	182,685	130,074	— 28.6	364,583	267,324	— 26.6
Texas Pacific Coal & Oil Co.	260,530	209,452	— 19.6	500,748	‡415,812	— 17.0
Union Oil Co. of California.	2,650,000	1,596,509	— 39.7	4,950,000	2,651,144	— 45.1
United Gas Corp.	1,439,697	598,691	— 58.5	3,837,847	2,913,198	— 24.1
Wilcox Oil & Gas Co.	75,314	103,041	+ 37.3	133,401	181,059	+ 36.1
Total 26 Companies.	$30,771,354	$19,122,357	— 37.6	$62,317,898	$33,657,716	— 46.2
Second Group—						
Consolidated Oil Corp.	....	....	....	$4,000,341	*$872,671	—122.0
Darby Petroleum Corp.	....	....	....	203,658	2,260	— 98.9
Pure Oil Co.	....	....	....	2,021,440	2,433,456	+ 20.4
Richfield Oil Corp.	....	....	....	1,005,383	1,196,128	+ 19.1
Socony-Vacuum Oil Co.	....	....	....	§20,000,000	§17,000,000	— 15.0
South Penn Oil Co.	....	....	....	847,660	890,170	+ 5.0
Standard Oil Co. (Indiana)	....	....	....	17,749,093	14,979,694	— 15.6
Sun Oil Co.	....	....	....	1,759,686	1,085,898	— 38.3
The Texas Corp.	....	....	....	§14,500,000	§°7,060,000	— 44.4
Total 5 Companies.	....	....	....	$42,281,467	$26,706,683	— 36.8
Total 35 Companies.	....	....	....	$124,405,159	$77,432,651	— 37.7

* Loss.
† Before deduction of non-recurring expense of certain stock options.
‡ Before deduction of Federal income taxes.
§ Estimate.
° Does not include payments from Bahrein Petroleum Company, whose current earnings are estimated at $600,000 per month.
ɪ No provision made for federal income and excess profits taxes.

Riser bends being lowered to foundation of the east bank anchorage

Making a Six-Line 500-Foot Deep River Crossing in 30 Minutes

A NUMBER of unusual performance records were established recently when Atlantic Refining Company engineers and construction crews completed a difficult under-river section of a pipe laying job across the Schuylkill River at Point Breeze, Philadelphia, where the company's Philadelphia refinery is located. The pipes were laid under the river to replace and add to lines, some of which were laid nearly a half century ago. All of the work was done by the company's own engineers and construction crews, working under permit from the War Department and to the depths specified by Army engineers.

At Point Breeze the Schuylkill is approximately 500 feet wide, with a 300-foot-wide, 30-foot-deep channel. The War Department required that the pipes be laid in a trench dredged to a depth of 47 feet below low water. Company specifications called for 2 lines of extra strength 12-inch pipe with ½-inch walls, 3 lines of extra strength 8-inch pipe with ½-inch walls, and a 4-inch steam line insulated with 1⅛-inch magnesia, and cased with 8-inch extra strength pipe.

The 12-inch lines are provided to carry crude oil from tankers unloading on the west bank of the river, to the refinery pipe lines on the east bank. Two of the 8-inch lines will carry gasoline and furnace oil from the refinery on the east bank to the Keystone Pipe Line terminal on the west bank.

The third 8-inch line will serve as a utility line. The steam line will carry steam from the refinery boiler house on the east bank to the water and fire pumps on the west bank.

Pull Pipes as Unit

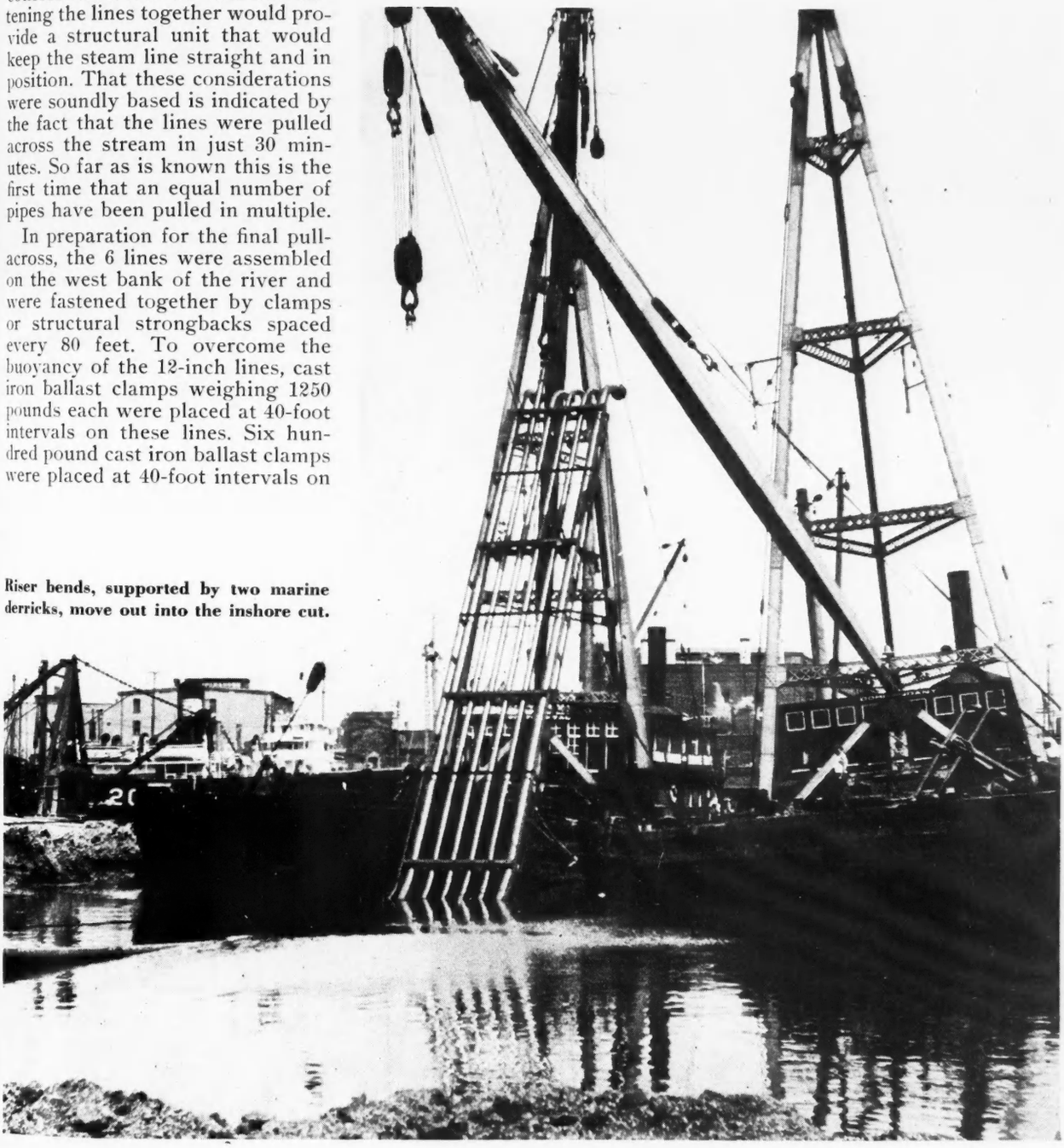
River traffic is normally heavy at this point on the river. To prevent stoppage of this traffic for more than a minimum period, and because it was known that the trench dredged for the lines would fill very rapidly with silt, it was decided to pull all six pipes across the river at the same time. Another consideration was the fact that fastening the lines together would provide a structural unit that would keep the steam line straight and in position. That these considerations were soundly based is indicated by the fact that the lines were pulled across the stream in just 30 minutes. So far as is known this is the first time that an equal number of pipes have been pulled in multiple.

In preparation for the final pull-across, the 6 lines were assembled on the west bank of the river and were fastened together by clamps or structural strongbacks spaced every 80 feet. To overcome the buoyancy of the 12-inch lines, cast iron ballast clamps weighing 1250 pounds each were placed at 40-foot intervals on these lines. Six hundred pound cast iron ballast clamps were placed at 40-foot intervals on the 8-inch lines. As protection against corrosion and abrasion, the lines were given a coat of corrosion-resistant paint primer, followed by a coat of hot enamel. They were then spirally wrapped with impregnated asbestos. This was followed by a second coat of hot enamel, a second spiral wrapping with the impregnated asbestos, and a final coat of hot enamel.

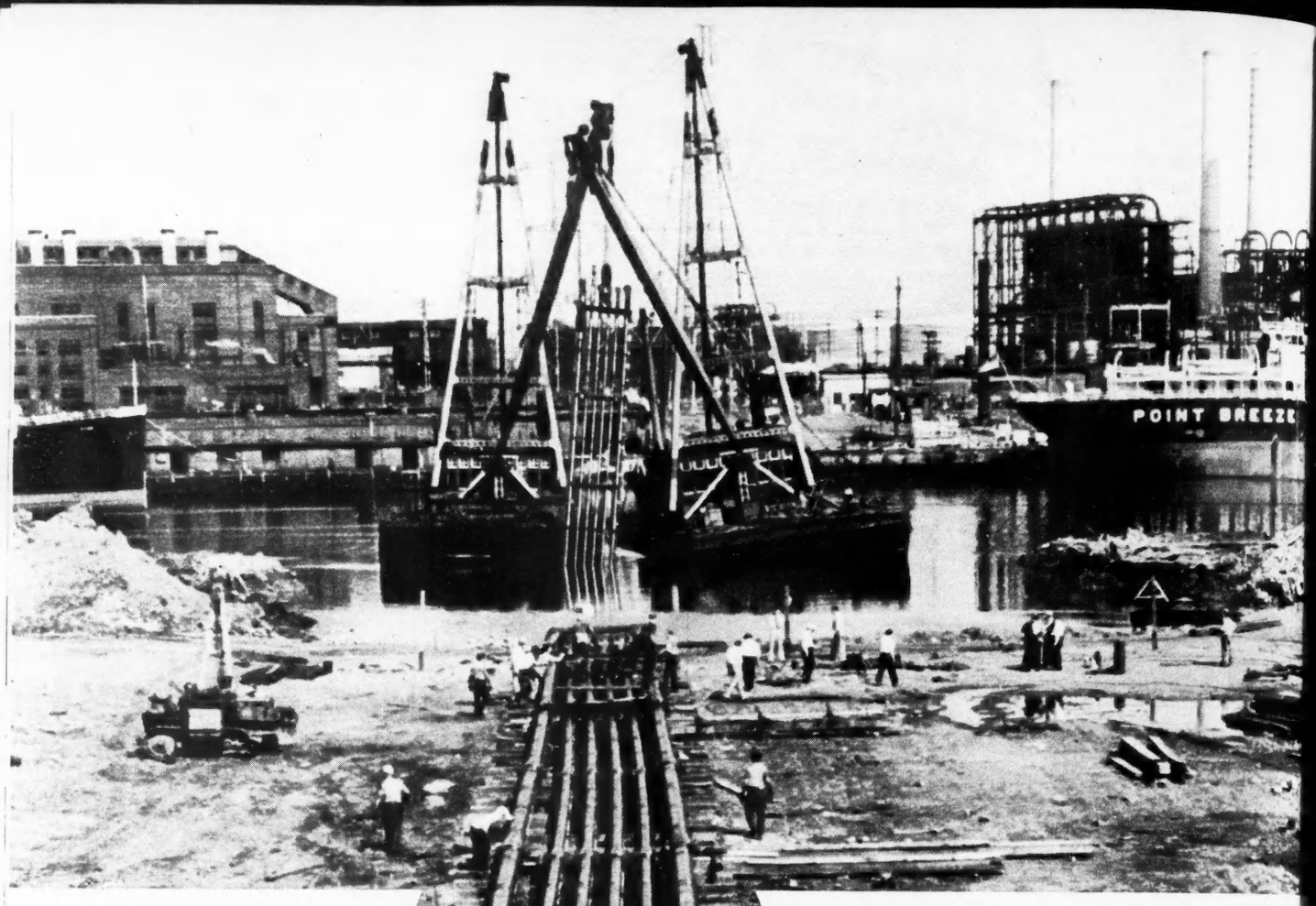
Existing wharf and bulkhead construction on the east bank of the river made it necessary to provide 70-foot riser bends, rising at an agle of 60 degrees from the pipe line trench in the bed of the stream. These riser bends were constructed as a complete rigid unit by clamping the 6 lines together inside a specially designed structural frame. When completed, the riser bends were raised to their inclined position, welded to the straight section assembled on the west bank, and held in place by guy lines.

Problem of Expansion

It was calculated that the 640 feet of 4-inch steam line required for the crossing would expand 16 inches during the passage of steam, and that the expansion of the casing would be 4 inches. To provide



Riser bends, supported by two marine derricks, move out into the inshore cut.



Lining up the second section of the multiple pipe line prior to making the final weld and starting the 500-foot pull across the Schuylkill river at Point Breeze.

for expansion the 4-inch steam line was guided by bronze shoes welded to the steam line and spaced at 20-foot intervals inside the 8-inch casing. To direct the expansion through the 8-inch casing, the 4-inch steam line was anchored to the casing at the east end where the riser bends join the straight section. A specially designed expansion gland was placed at the west end of the steam line.

Due to physical conditions on the west bank it was impossible to assemble the 6 lines in one 640-foot unit. Two 320-foot sections were assembled and welded on special runway tracks. The first section, of which the east bank riser bends were a part, was assembled on the center line of the crossing. The second section was assembled parallel to the first section on cribbing and rollers designed to allow it to be moved to the center line of the crossing after the first section had been pulled part way out into an inshore cut made in the river bank for this purpose. The two 320-foot sections were then welded together for the pull across the river.

The total weight of the lines to be pulled across the stream amounted to 404,524

pounds. To prevent damage to the lines while being dragged across the bed of the river, each pipe was provided with 4-by-10-inch continuous oak skids. These were clamped by "U" bolts to the pipes, presenting a flat, level surface, and acting as sled runners for the lines as they slid across the river bottom.

The problem of supporting the riser bends when the first section was moved out into the in-shore cut was solved by suspending them between two marine derricks. When the time arrived to pull the pipe across, the marine derricks were maneuvered to take positions directly over the pipes. The main fall from the first derrick was then made fast to a structure at the heel of the riser bends by an equalizing wire rope cable sling designed for the purpose. The auxiliary fall from the first derrick was rigged to a similar structure about 20 feet from the top of the riser bends. The main fall from the second derrick was attached to a cable sling 140 feet behind the main fall of the first derrick. The stern boom and tackle was rigged to another sling 140 feet aft of the bow of the second derrick, thus suspending 280 feet of the pipe line.

Single Cable Used

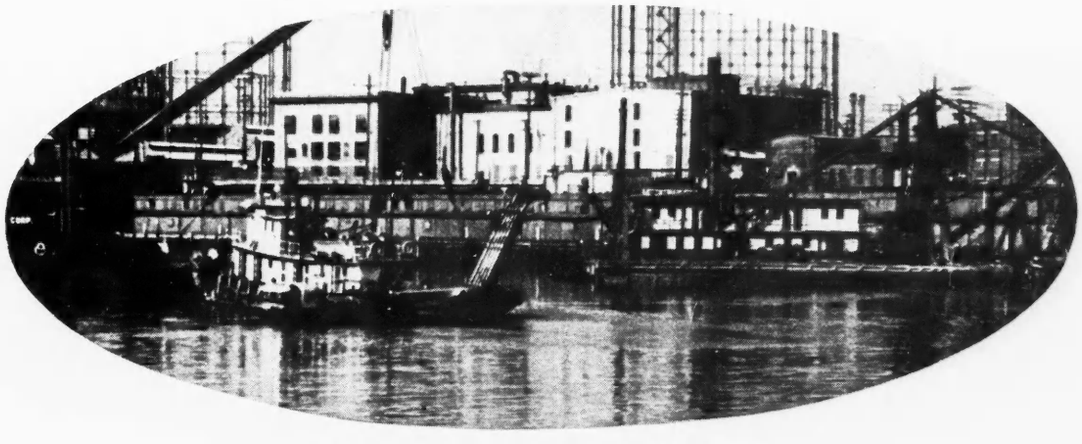
It was estimated that with all of the pipe lines dragging on the bottom the friction of the skids on the bottom would amount to approximately 50,000 pounds. It was decided to use a single cable on direct pull to tow the lines across the river, rather than a reaved block and cable, because of the possibility that the reaved cable would foul under the river. The power problem was solved with a marine type towing engine with 16 16-inch cylinders. With the steam pressure available, the engine was capable of a direct pull of 48,000 pounds and had more than sufficient drum capacity for the large cable required.

The 1⅛-inch diameter, independent, wire rope main cable was provided with a closed socket and shackle at the free end which was taken across the river from the east bank where the engine was located, and was attached to a special cable sling, spreader beam and side bridle cables. The side bridle cables were attached to towing lugs welded to the 12-inch pipe 120 feet back of the riser bends. The bridle cables allowed the main cable to change its angle as the pipe lines were pulled across to the east bank.

When all was in readiness for the pull across, the pipe lines were raised slightly off the bottom by the marine derricks, reducing the estimated friction of 50,000 pounds to an estimated maximum of 30,000 pounds, well within the capacity of the engine and cable. The final pull started at 4:55 p.m. As the pipe lines moved across the river a tug maneuvered the two marine derricks across the stream, keeping them lined up and in step with the moving pipe.

To provide against the possibility that the pull might prove unexpectedly heavy, a pile driver rig that had been preparing the east bank anchorage for the pipe lines stood by ready to assist by lifting additional sections of the lines from the river bottom by means of a 50-foot cable sling attached to the pipes and a floating buoy. Possible failure of the engine or main cable was provided against by an auxiliary cable of the same type as the main cable, rigged through a 30-inch sheave block and leading to the hoisting drum of a bucket dredge which was anchored upstream from the pipe line crossing. However, neither of the precautions proved necessary. By 5:25 p.m. the lines were across the river and the riser bends were in position on the east bank.

The east bank anchorage of the pipe lines is an independent pile structure set back 40 feet from the face of the bulkhead and wharf, so that while ships docking at the wharf may move the wharf structure the anchorage will be unaffected. On the west bank the pipe lines now rest on the bottom of the excavated cut, terminating 180 feet in-shore from the U. S. bulkhead line. Here a pile structure and concrete anchorage will be built. The pipes will then be raised from the bottom of the cut and placed on the anchorage.



Fifteen minutes after the start of the final pull. Positi[on] of the tugs and traveling bl[ock] differ[ence] dicates the lines . tempera[ture] ay across manufactu[ring] ill. er recommends that . slurry be used, and that [a] ted constant temperature of [a]

Cement For Oil Wells

Status of Testing Methods and Summary of Properties

By W. W. ROBINSON,
The Texas Company

THIS article continues the presentation of test methods being used to evaluate cement for use in oil wells that was commenced in THE OIL WEEKLY of August 31, 1939. Part 1 discussed sampling, determination of standard slurry fluidity, and thickening-time tests.

Consistometer Test

Purpose

Same as for thickening-time test.

Apparatus

The consistometer unit is complete with motor, switches, thermo-regulator, base board, and carrying case. Accessory equipment is the same as for the thickening-time test, with the exception that a smaller slurry jar may be used and the slurry funnel dispensed with.

Preparation of Apparatus

Care should be taken to see that the apparatus is clean. After each test, the inside of the shell and the paddles—particularly the outside edges—should be cleaned and brushed.

Surfaces that come in contact with the slurry should be given a light coating of waterproof grease before each test. A medium grade of water-pump grease is satisfactory.

The two ball bearings in the top of the cylinder and the two in the torque-indicating mechanism must be kept clean by an occasional washing in kerosene, and then oiled with a light grade of lubricating oil.

All exposed steel parts must be kept clean and lightly oiled or greased if water is used in the bath. Ordinary lubricating oil or glycerin-and-water mixtures may be used in the heating bath. It will be found helpful to place a layer of oil on top of the water or water mixture to prevent evaporation.

The heater never should be turned on unless the bath has liquid in it.

The apparatus should be assembled, placed in the water bath, and rotated to insure that none of the parts scrape. The index of the torque-indicating mechanism should point to zero when the pendulum hangs free. If it does not, the quadrant scale should be adjusted.

Control of Temperature

The two heating units in the bath are connected to a three-heat switch in such a manner that three rates of heating are available. With the instrument assembled, the bath is heated to the desired temperature and the thermo-regulator adjusted.

Preparation of Sample

A weighed sample of cement which has passed through a 30-mesh screen is taken for the test. The quantities of dry cement and water needed to make up different percentages of slurry are given in Table 3.

Measure or weigh out the required amount of water (preferably distilled) at a temperature of 80 deg. F., and pour into the slurry jar. Then add the cement, and simultaneously start the stopwatch to time the test.

Procedure

After the [illegible] added to the [illegible] uted thro[illegible] by means of a broad spatula, or other blunt instrument which will reach to the bottom of the jar. This operation requires but a moment to perform, and will assist in a rapid slurrification.

Cover the slurry jar tightly, and shake vigorously for at least 2 min. Quickly pour 500 ml. of slurry into the shell, which has been removed from the bath. To facilitate adding the proper amount, the height to which 500 ml. rises should be marked inside the cylinder.

The paddle is inserted, the lid put

TABLE 3

Quantities of Dry Cement and Water Needed to Make up Different Percentages of Slurry for the Consistometer Test

Slurry (Percent)	Quantity of Cement (Grams)	Quantity of Water* (Grams)	Equivalent Volume of Water at 80 Deg. F. (Milliliters)
30	1,160	352	353
31	1,145	358	359
32	1,125	363	364
33	1,110	368	369
34	1,090	374	376
35	1,075	379	381
36	1,060	384	386
37	1,045	389	391
38	1,030	394	396
39	1,015	398	400
40	1,000	403	404
41	985	407	408
42	970	411	413
43	960	416	417
44	945	420	421
45	935	423	425
46	925	427	429
47	910	430	432
48	900	435	437
49	890	439	441
50	875	441	442
51	865	445	447
52	855	447	449
53	845	451	453
54	835	454	456
55	825	457	459
56	815	461	463
57	805	463	465
58	795	465	467
59	790	468	470
60	780	471	473

* 3 grams of water have been added to compensate for errors due to wetting, drainage, and evaporation.

This paper was presented at the Ninth Mid-Year Meeting, American Petroleum Institute, at the Roosevelt Hotel, New Orleans, La., May 17, 1939.

on, and the slotted shaft engaged with the pin in the knob.

The assembled shell then is replaced in the bath, the gears engaged, and the torque-indicator cord passed around the knob and looped over the pin.

It is important that the cord lie on the outside of both the torque-indicator ring and the knob in order to preserve a constant radius of pull. The motor then is started, and readings on the torque-indicator scale are taken every 10 min. from the time the stopwatch is started.

As the test proceeds, a moment is created as the pendulum is pulled from vertical. This moment varies from zero to a maximum when the lever arm is horizontal. A quadrant scale behind the pointer is graduated in 10 equal increments of torque.

When a reading of 10 has been obtained, the watch is stopped. The cement is removed from the shell at once, because the rate of setting is rapid. Fig. 22 through Fig. 25 show the apparatus, and illustrate the shell assembly and the consistency of the slurry at the end of the test.

Calculation of Results

The time, in minutes, from the instant the dry cement first is added to the water until a reading of 10 has been obtained is the consistency time of the cement slurry.

Occasionally it is desirable to plot as abscissa the 10-min. consistency reading against time on common graph paper in order to obtain the slope of the curve.

Interpretation of Results

The general shape of this curve gives a picture of the setting characteristics of the slurry tested. A comparison of the curves of different cements usually discloses variations that are characteristic.

According to the manufacturer of the instrument, a 40-percent slurry of a cement suitable for oil-well work should exhibit the following characteristics:

1. The initial consistency should be between 1 and 3 on the torque scale.
2. The consistency should remain below 4 for 3 hours.
3. There should be a sharp break toward a higher consistency after 3 hours.
4. A tangent to the consistency curve should be practically vertical when the curve reaches a consistency of 10. This characteristic is indicative of the rapidity with which the cement will develop strength after initial set.

Consistometer Test

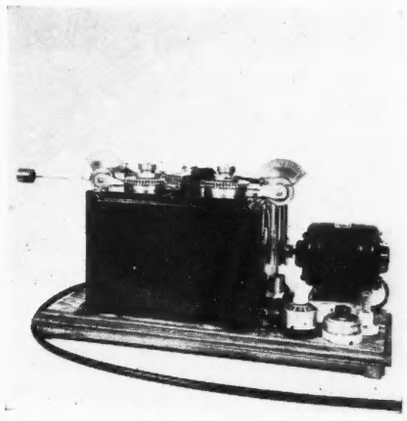


FIGURE 22

The consistometer apparatus consists of two shells actuated by a worm-gear drive. At the top of each shell is a movable drag head which turns as the thickening cement exerts a thrust against the paddle. The thrust is communicated to a lever arm designed and calibrated to read, in centipoises, the absolute unit of viscosity. At the left will be seen the position of the lever arm when the reading of 10 is obtained. This is the point to which the test is carried. At the right is shown the lever arm at the zero position. Two tests may be run simultaneously or independently, as the shells can be removed from the worm-gear drive without stopping the instrument.

FIGURE 23

At the left is shown the floating paddle, and behind it the completely-assembled shell. Just above the gear head will be seen the lower portion of the drag head, and slightly to the right the small lug to which the lever cord is attached. At the right is shown the operator fitting the pin at the top of the floating paddle into the movable head.

FIGURE 24

When a pull of 10 (approximately 10,000 centipoises) is obtained, the mobility of the slurry has been reduced to the point of rendering it barely pumpable.

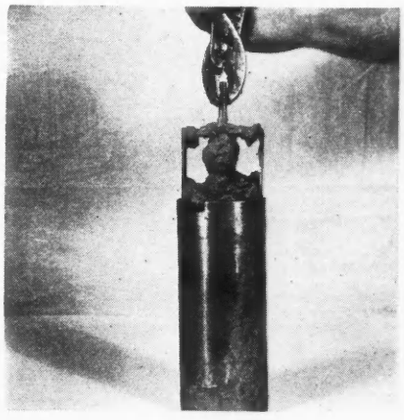


FIGURE 25

Soon after the reading of 10 has been obtained, the initial set takes place.

The consistometer test is used in the Mid-Continent area, whereas the thickening-time test has found more widespread application on the Pacific Coast. Although these tests are essentially the same in principle, the consistometer measures the resistance developed by thickening cement in different units and under different temperature conditions.

The manufacturer of the consistometer recommends that a 40-percent slurry be used, and that a selected constant temperature of 100, 140, or 180 deg. F. be chosen corresponding to the probable conditions during cementing. The previously-described thickening-time test commonly is made with a 40-percent slurry with the bath temperature rising from 80 deg. F. at the start to a maximum of 140 deg. F. at the end of 1 hour. This temperature is maintained to the conclusion of the test.

The results from either test can be adapted to whatever system of interpretation is desired. Fig. 26 illustrates that there is a smooth-line relationship between the results obtained by the two instruments.

Tensile-Strength Test

Purpose

The purpose of the tensile-strength test is to provide a means of determining the strength of set cement,

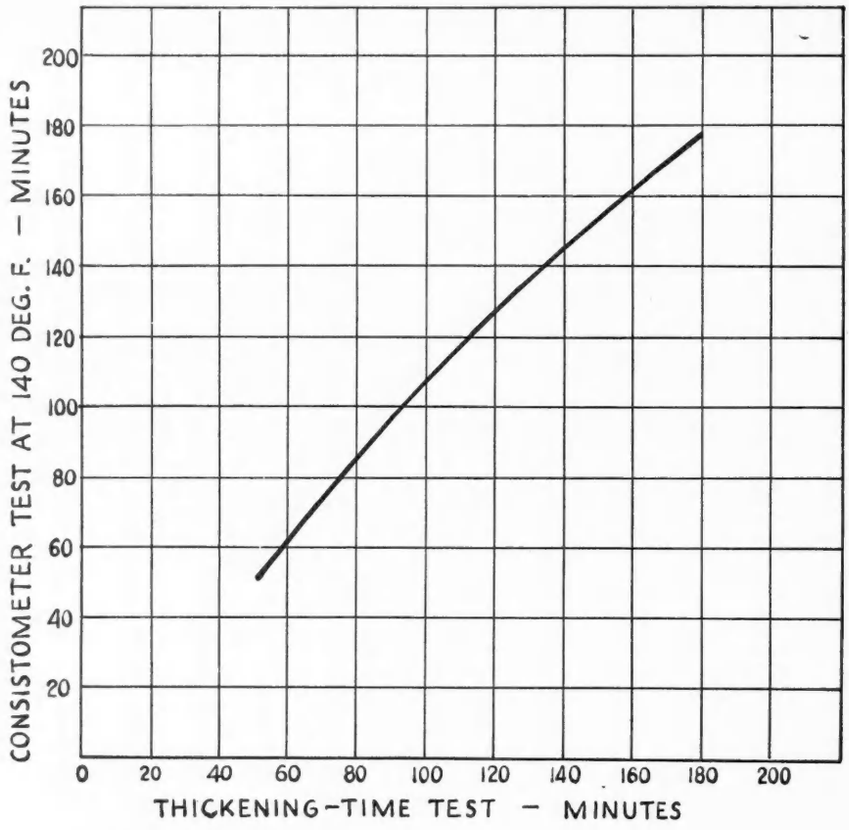


FIGURE 26

Approximate Comparison of Results Obtained with Consistometer and Thickening-Time Testers, Using Three Types of Cement

using water—i. e., cement ratios and curing times and temperatures that necessarily deviate from ASTM test C 77-37.

Apparatus

1. Gang molds and tensile-strength breaking machine meeting ASTM specification C 77-37.
2. Glass or metal plates on which to place molds.
3. Balance as specified under thickening time.
4. ½-gal. glass jar with screw or clamp cover.
5. Chemical thermometer range, —40 to +220 deg. F.
6. Waterproof grease.
7. Standard 30-mesh screen.
8. Thermostatically-controlled water bath.

Preparation

Sample: The sample should be screened through a standard 30-mesh sieve, and then weighed on a balance sensitive to 20 mg. Enough sample should be prepared and weighed to make sufficient slurry to fill the molds used in making the test. Table 4 gives quantities of water and cement sufficient to make various slurries for three or six briquettes.

Molds: The molds should be greased on the inside, and placed on a greased plate so that each briquette compartment is water-tight and the set cement will not stick to the molds. To prevent leakage, it is necessary to apply grease around the outside of the molds at their contact with the plate.

TABLE 4

Quantities of Dry Cement and Water Needed to make up Volumes of Different Percentages of Slurry Sufficient for Casting Three or Six Briquettes for Performing Tensile-Strength Test

Slurry (Percent)	Quantity of Cement for Three Blocks (Grams)	Equivalent Volume of Water at 80 Deg. F. for Three Blocks* (Milliliters)	Quantity of Cement for Six Blocks (Grams)	Equivalent Volume of Water at 80 Deg. F. for Six Blocks* (Milliliters)
30	700	214	1,400	424
31	685	216	1,370	429
32	675	220	1,350	436
33	665	223	1,330	443
34	655	227	1,310	450
35	645	230	1,290	457
36	635	233	1,270	462
37	625	235	1,250	468
38	615	238	1,230	472
39	610	242	1,220	481
40	600	244	1,200	485
41	590	246	1,180	489
42	580	248	1,160	492
42	575	251	1,150	500
44	570	255	1,140	507
45	560	256	1,120	509
46	555	259	1,110	516
47	545	260	1,090	518
48	540	263	1,080	523
49	530	264	1,060	524
50	525	266	1,050	530
51	520	269	1,040	535
52	515	272	1,030	541
53	510	274	1,020	546
54	500	274	1,000	545
55	495	276	990	550
56	490	278	980	554
57	485	280	970	555
58	480	282	960	562
59	475	284	950	566
60	470	286	940	569

* 3 grams of water have been added to compensate for errors due to wetting, drainage, and evaporation.

Procedure

For making the slurry: The correct amount of water at 80 deg. F. for making a given quantity of slurry of a percentage indicated by the ring test is placed in a slurry jar. The corresponding quantity of cement is poured into the water, the jar is covered, and shaken vigorously for at least 2 min.

For making the briquettes: The slurry then is poured into the molds rapidly in a way to insure uniform composition in each mold. The slurry in each mold is puddled immediately with a stirring rod to liberate entrained air, and the excess of slurry scraped off the mold. The time consumed in these operations should not exceed 3 min.

Curing of Briquettes

The freshly-filled molds should be submerged slowly in the water bath at 150 deg. F. While curing, the tops of the briquettes should be exposed to the water of the bath. To avoid distortion of the briquettes before the slurry becomes set, it is preferable to arrange the molds on a movable-screen platform above the bath container so that the briquettes can be poured, puddled, scraped, and lowered into the bath without any disturbance of the slurry.

After 4 or 5 hours, when the slurry has set, the briquettes should be removed from the molds and replaced in the 150-deg.-F. bath.

Twenty-four hours after the briquettes first were poured, four of the briquettes should be removed from the bath and placed in an 80-deg.-F. water bath (at least 3 gal. of water) for a period of 30 min. They then should be removed one at a time, and broken in the tensile-strength machine. Three- and seven-day strengths should be determined in the same manner as the 24-hour strengths.

Breaking of Briquettes

Before breaking the briquettes, the tensile-strength testing machine should be adjusted so that the load

Tensile-Strength Test

FIGURE 27

In preparing briquettes for the tensile-strength test, the slurrified cement is poured into the molds rapidly to insure uniform composition. The slurry in each mold immediately is puddled with a stirring rod to liberate entrained air.

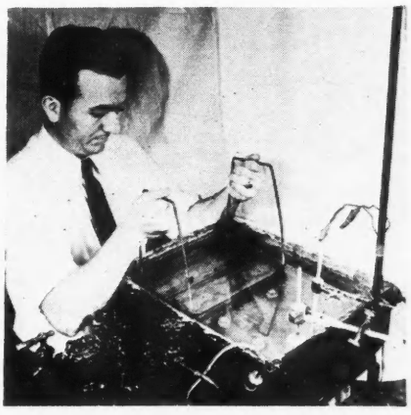


FIGURE 28

After removing excess slurry with a spatula, the freshly-filled molds should be submerged slowly into the 150-degree-F. water bath. While curing, the tops of the briquettes should be exposed to the bath water.

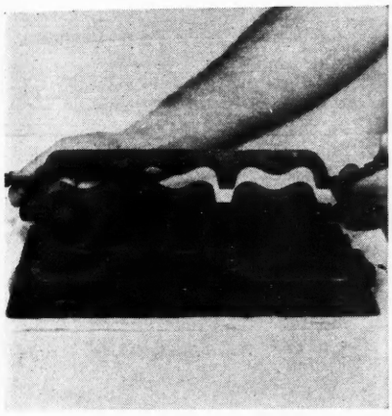


FIGURE 29

After 4 or 5 hours, when the slurry has set, the briquettes should be removed from the molds, and replaced in the 150-degree-F. bath.

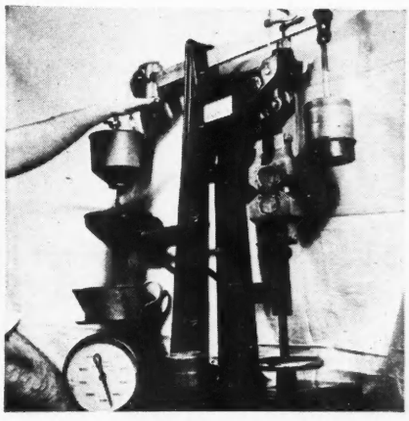


FIGURE 30

After curing for the required time, the briquettes are broken in the tensile-strength machine. The machine should be adjusted so that the load is applied continuously at the rate of 600 lb. (plus or minus 25 lb.) per minute.

is applied to the briquette continuously at the rate of 600 lb. (plus or minus 25 lb.) per minute. Fig. 27 through Fig. 30 illustrate the puddling of slurry in preparing tensile-strength briquettes, immersion of the briquettes in the curing bath, their removal from the molds, and subsequent breaking in the tensile-strength machine.

Calculation of Results

At least four briquettes should be broken for each time interval, and no correction should be made for variation of the cross-sectional area of the briquettes.

The breaking strength of each briquette and the average should be recorded. Briquettes manifestly faulty, or which have strengths differing more than 15 percent from the average value, should not be considered in determining the tensile strength.

Interpretation of Results

Although much remains to be learned regarding the effect of curing temperatures on the strength of neat cements, data available indicate that most cements mixed with the percentage of water indicated by the ring test have 1-day tensile strengths at 150 deg. F. in excess of 300 lb., with an increase in strength after 3 days.

Foam Test

Purpose

This test is designed to detect cement that, although normal in other respects, produces a large amount of stabilized foam when slurrified in the field and is apt to cause trouble in the mixing process.

Apparatus

A test tube, approximately 1 in. in diameter by 8 in. long.

A graduated cylinder.

A balance.

Procedure

Place 50 ml. of water in the test tube, and add 30 grams of cement. Shake vigorously for 1 min., and then wash down the sides of the test tube with a small amount of water to bring the foam to the top of the clear water. Allow the tube to stand for 5 min.

Results

Record the height of the foam to

Foam Test

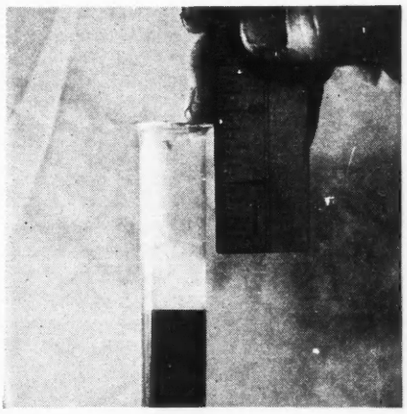


FIGURE 31

In making the foam test, any foam remaining after 5 minutes is measured to the nearest sixteenth of an inch.

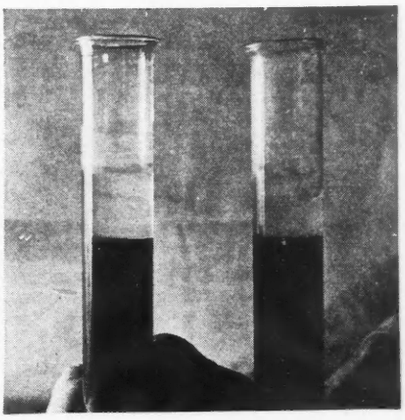


FIGURE 32

From left to right, a negative and a positive foam test are illustrated.

TABLE 5

California Oil-Well Cements

Company	A	B	C	D	E
Fineness (percent through 200-mesh) (dry)	89.0	80.5	93.4	92.6	82.0
Specific surface (sq. cm. per gram) (Wagner)	1,400	1,201	1,453	1,350	1,080
Thickening-time data: 30-min. torque (oz.) 40%	3.5	4.0	4.5	3.0	3.0
140 °F. time to 40-oz. pull (min.) 40%	173	180	163	168	160
1 °F. per min. rise 30 min. torque (oz.) 50%	3.5	.....	1.5	1.0	.....
1 °F per min. rise time to 40-oz pull (min.) 50%	223	.....	220	300	.....
Tensile strength (lb. per sq. in)					
40 percent, 100 deg. F. plain....1 day	207	295	193	267*	258
3 day	361	566	457	584	355
7 day	555	608	533	601	472
40 percent, 150 deg F. plain.....1 day	323	488	376	373	378
3 day	493	453	465	666	442
7 day	523	597	510	732	565
40 percent, 200 deg. F. plain.....1 day	334	444	452	597	403
3 day	441	496	512	628	473
7 day	486	447	610	691	600
Bogue constituents, percent C_3S	44.6	53.9	41	57.9	51.5
percent C_2S	27.4	15.3	34	24.8	18.2
percent C_3A	2.8	3.3	5	1.9	3.2
percent C_4AF	15.9	16.8	14	11.0	20.5
percent $CaSO_4$	3.5	.....	3	2.7	3.0
* Compressive strength / 10					

physical properties of major importance in oil-well cementing are thickening time and strength.[4]

The thickening time was taken with the temperature rising 1 deg. F. per min. from 80 deg. F. to 140 deg. F. in 1 hour, as this represents a good approximation of the thermal history of mixing and placing a cement slurry in a deep well. Slurries of 40 and 50 percent were tested, as these fall in a range frequently used. Inasmuch as the ring test has not been used by manufacturers, the properties were reported at constant-water percentages.

The specific tests used in this study have been made in accordance with testing methods previously described,

TABLE 6

California Construction Cements

Company	A		B		C		D		E	
Fineness (percent through 200-mesh) (dry)	96.9		96.9		93.1		95.6		95.8	
Specific surface (sq. cm. per gram) (Wagner)	1,800		1,752		1,503		1,762		1,680	
Thickening-time data: 30-min. torque (oz.) 40 percent	8.0		8.0		7.5		7.0		6.0	
140 deg. F. time to 40-oz. pull (min.) 40 percent	109		87		103		80		82	
1-deg.-F.-per-min. rise 30-min. torque (oz.) 50 percent	3.5		....		2.0		3.0		....	
1-deg.-F.-per-min. rise time to 40-oz. pull (min.) 50 percent	165		....		145		112		....	
		$CaCl_2$ Specific Gravity		$CaCl_2$ Specific Gravity		$CaCl_2$ Specific Gravity		$CaCl_2$ Specific Gravity		$CaCl_2$ Specific Gravity
Tensile strength (lb. per sq. in.)	Plain	1.015	Plain	1.015	Plain	1.015	Plain	1.015	Plain	1.015
40 percent, 100 deg. F.....1 day	279	374	267	372	343	385	394*	448*	380	468
3 day	572	584	523	624	513	522	649	740	450	590
7 day	770	586	740	738	547	602	668	697	537	575
40 percent, 150 deg. F. plain....1 day	408	...	533	....	445	...	382	...	410	...
3 day	537	...	612	...	542	...	601	...	490	....
7 day	641	...	552	...	552	...	535	...	482	...
40 percent, 200 deg. F. plain....1 day	360	...	576	...	440	...	552	...	435	...
3 day	424	...	442	...	320	...	589	...	440	...
7 day	487	...	428	...	360	...	634	...	405	...
Bogue constituents, percent C_3S	42.4		44.5		44.0		62.6		54.5	
percent C_2S	33.0		28.1		30.0		15.0		19.0	
percent C_3A	6.1		6.9		13.0		9.5		10.7	
percent C_4AF	11.0		10.3		6.0		8.2		8.3	
percent $CaSO_4$	3.5		....		3.0		2.9		3.1	
* Compressive strength / 10										

the nearest sixteenth of an inch.

Interpretation of Results

Cement that produces more than ½ in. of foam may cause difficulty during field slurrification. Fig. 31 and 32 illustrate a positive and negative foam test.

Physical Properties of Cement

Tables 5 to 10 give in brief form various properties of three types of cement made by each of five manufacturers in California, and three types of cement made by five Mid-Continent manufacturers. The purpose of this tabulation is to show the range of pertinent properties of the cement available for use in oil wells.

In studying these tabulations it should be kept in mind that the two

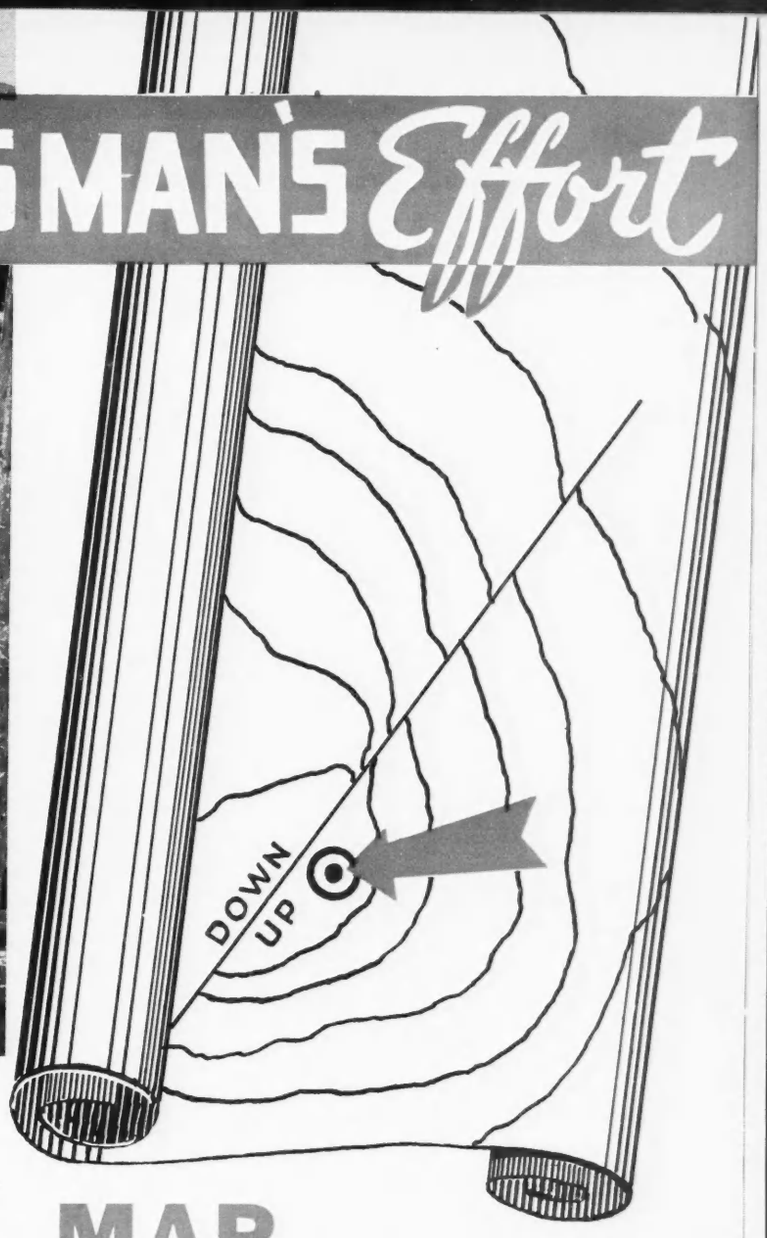
TABLE 8

Mid-Continent Oil-Well Cements

Company	M	N	P	Q	R
Fineness (percent through 200-mesh) (dry)	96.6	90.6	98.3	89.8	.....
Specific surface (sq. cm. per gram) (Wagner)	1,485	1,829	1,903	1,306	.....
Thickening-time data: 30-min. torque (oz.) 40%	3	11	7.2	.....	.....
140 deg. F. time to 40-oz. pull (min.) 40%	175	160	80	300*	.....
1-deg.-F.-per-min. rise 30 min. torque (oz.) 50%	2	5	4.0	.....	.....
1-deg.-F.-per-min. rise time to 40-oz. pull (min) 50%	400	210	121	670*	.....
Compressive strength (lb. per sq. in.)					
40 percent, 100 deg. F. plain..1 day	1,500	1,690	3,950	1,058	.....
3 day	3,950	4,683	4,893	2,329	.....
7 day	5,850	7,442	5,200	3,529	.....
40 percent, 150 deg. F. plain..1 day	3,250	.....	5,070	1,854	.....
3 day	6,275	.....	4,650	4,038	.....
7 day	7,350	.....	4,283	7,050	.....
40 percent, 200 deg. F. plain..1 day	4,570	3,595	5,733	5,708	.....
3 day	7,345	5,083	5,400	7,542	.....
7 day	7,750	6,158	5,633	8,250	.....
Bogue constituents, percent C_3S	49.0	35.7	62.4	28.5	.....
percent C_2S	24.9	36.0	11.0	46.0	.....
percent C_3A	.....	5.2	9.3	0.0	.....
percent C_4AF	21.9	17.1	9.0	19.8	.....
percent $CaSO_4$	2.3	3.1	3.8	3.3	.....

* Halliburton consistometer.

BACK OF THIS MAN'S *Effort*



A CONTOUR MAP . . . . . .

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Eminently Successful

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TABLE 7

California High-Early-Strength and Special Cements

Company	A		B	C	D	E
Type	Slow-Construction		Oil-Well (High-Temperature)	High-Early-Strength	High-Early-Strength	High-Early-Strength
Fineness (percent through 200-mesh)	89.0 (dry)		92.9 (dry)	99.7 (wet)	99.9 (wet)	99 (wet)
Specific surface (sq. cm. per gram) (Wagner)	1,400		1,576	2,520	2,645	2,785
Thickening-time data: 30-min. torque (oz.) 40 per cent	3.5		4.0	21	34	11 (45%)
140 deg. F. time to 40-oz. pull (min.) 40 percent	139		265	54	38	63
1 deg.-F.per-min. rise 30-min. torque (oz.) 50 percent	.....		.....	6.0	7.0	8
1-deg.-F.per-min. rise time to 40-oz. pull (min.) 50 percent	.....		.....	83	77	75
		$CaCl_2$ Specific Gravity				
Tensile strength (lb. per sq. in.)	Pl.	1.015	Plain	Plain	Plain	Plain (45%)
40 percent, 100 deg. F. 1 day	226	252	215	412	499*	410
3 day	312	409	460	576	612	500
7 day	437	568	508	560	700	580
40 percent, 150 deg. F. plain 1 day	339	...	357	500	610	430
3 day	439	...	475	587	628	485
7 day	587	...	450	420	686	510
40 percent, 200 deg. F. plain 1 day	398	...	532	522	777	435
3 day	468	...	527	580	776	507
7 day	553	...	520	560	719	497
Bogue constituents, percent C_3S		42.4	56.8	63	70.1	60.3
percent C_2S		33.0	11.8	11	7.4	12.3
percent C_3A		6.1	2.6	10	7.8	8.3
percent C_4AF		11.0	17.3	8	8.2	11.7
percent $CaSO_4$		3.5	.....	4	3.5	3.1

* Compressive strength / 10

with the exception that strengths also were determined at 100 and 200 deg. F. These latter curing temperatures, although not specified in the tensile-strength procedure, were used to indicate the effect of curing temperatures on strength.

It will be noted that some of the cements do not show greater strengths at 200 deg. F. than at 150 deg. F. This should not be taken as proof of retrogression in strengths, as the technique of obtaining strengths at elevated temperatures has not been worked out well. It is understood that the procedure varied between different laboratories in that some of the tests marked "200 deg. F.," were made by first setting the cement at 150 deg. F. and then raising the temperature. In spite of these limitations, the point should not be overlooked that the temperature at which a cement is cured has an important bearing on its rate of attaining strength.

Strengths were measured at temperatures of 100, 150, and 200 deg. F. as representing formation temperatures prevailing during cement jobs in shallow, medium, and deep wells. The one-, three-, and seven-day curing times were chosen to cover the standing time, and also to show whether the cement gained strength after the normal standing time, as it should.

The other properties listed may not be essential in testing cement for oil-well use, but are of some interest. The fineness and specific surface have a controlling influence on the amount of water needed for the proper slurry pumpability, as measured by the ring test. The Bogue constituents reflect the chemical composition of the cements. However, manufacturers are not in agreement as to their validity and applicability to cement for oil-well use, and these constituents are presented only for comparison. It has been reported[5] that there is a definite value in having a low percentage of tri-calcium aluminate for those applications if sulfate water is anticipated.

Tables 5 through 10 do not show variations in properties from batch to batch of a given manufacturer's product, but indicate the variation to be expected in a given type of cement as obtained from different sources. Among the California "oil-well" cements, the thickening time of 40 percent slurries is within close limits, the maximum variation being 12 per-

TABLE 9

Mid-Continent Construction Cements

Company	M		N		P		Q		R	
Fineness (percent through 200-mesh) (dry)	99.5		89.4		97.6		98.7		93.0	
Specific surface (sq. cm. per gram) (Wagner)	1,900		1,653		1,800		1,752		1,800	
Thickening-time data: 30-min. torque (oz.) 40 percent	.....		9.0		8.0		.....		.....	
140 deg. F. time to 40-oz. pull (min.) 40 percent	.....		150		83		97*		130	
1-deg.-F.per-min. rise 30-min. torque (oz.) 50 percent	4.0		7.0		2.0		.....		.....	
1-deg.-F.-per-min. rise time to 40-oz. pull (min.) 50 percent	130		190		125		130*		150	
		$CaCl_2$ Specific Gravity		$CaCl_2$ Specific Gravity		$CaCl_2$ Specific Gravity		$CaCl_2$ Specific Gravity		$CaCl_2$ Specific Gravity
Compressive strength (lb. per sq. in.)	Plain	1.015	Plain	1.015	Plain	1.015	Plain	1.015	Plain	1.015
40 percent, 100 deg. F. 1 day	3,766	5,350	3,383	5,675	2,443	3,700	4,742	5,916	4,000	....
3 day	6,683	8,800	8,117	9,350	3,590	5,060	7,792	8,250	5,100	....
7 day	8,216	9,438	9,467	10,517	4,350	6,800	10,208	8,500	6,050	....
40 percent, 150 deg. F. plain 1 day	6,150	....	....	....	5,367	....	7,150	....	4,350	....
3 day	7,816	....	....	....	5,567	....	9,200	....	5,210	....
7 day	8,240	....	....	....	5,200	....	9,964	....	6,120	....
40 percent, 200 deg. F. plain 1 day	....	....	6,458	....	5,533	....	7,667	....	4,100	....
3 day	....	....	7,183	....	4,673	....	9,667	....	4,980	....
7 day	....	....	7,450	....	5,233	....	9,830	....	5,760	....
Bogue constituents, percent C_3S	51.3		57.5		59.5		48.0		62.0	
percent C_2S	20.3		17.2		15.0		27.7		13.0	
percent C_3A	13.8		12.9		9.1		12.7		12.5	
percent C_4AF	7.6		6.8		9.0		6.5		8.4	
percent $CaSO_4$	3.2		2.8		3.1		3.3		3.4	

* Halliburton consistometer.

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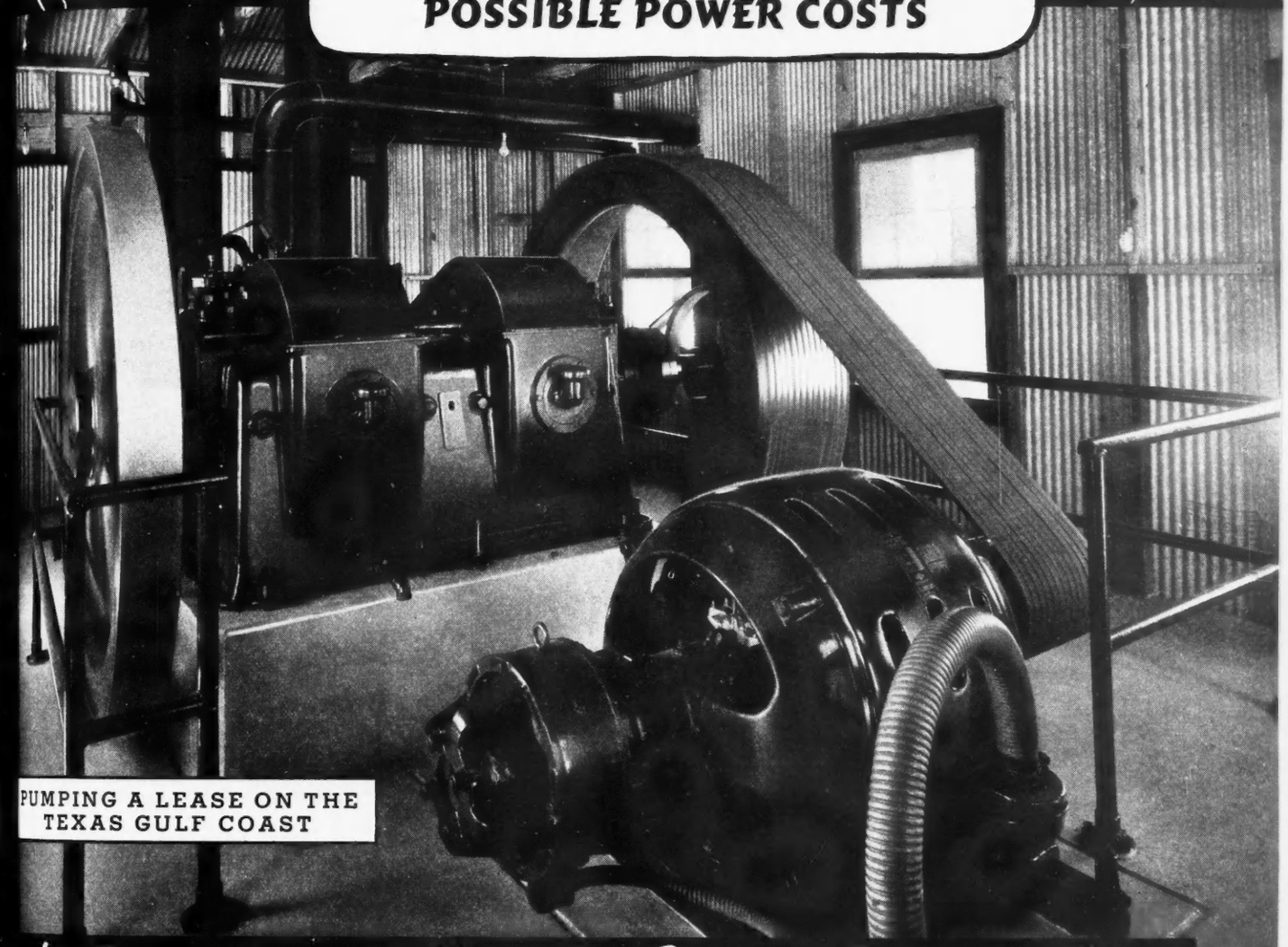

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TABLE 10

Mid-Continent High-Early-Strength Cements

Company	M	N	P	Q	R
Fineness (percent through 200-mesh) (wet)	99.8	98.5	100	99.6	100.0
Specific surface (sq. cm. per gram) (Wagner)	2,600	2,385	2,497	2,425	2,450
Thickening-time data: 30-min. torque (oz.) 40%	.....	30.0	15.0	.....	.....
140 deg. F. time to 40-oz. pull (min.) 40%	.....	65	59	75*	100
1-deg.-F.-per-min. rise 30 min. torque (oz.) 50%	6	16	6	.....	.....
1-deg.-F.-per-min. rise time to 40-oz. pull (min) 50%	120	140	92	93*	120
Compressive strength (lb. per sq. in.)					
40 percent, 100 deg. F. plain..1 day	4,733	6,650	4,550	6,833	5,000
3 day	8,063	10,292	6,466	9,542	6,050
7 day	9,250	11,275	6,667	10,333	7,120
40 percent, 150 deg. F. plain..1 day	7,438	.....	5,600	8,542	5,305
3 day	9,200	.....	5,066	9,980	6,356
7 day	9,410	.....	5,550	10,830	7,310
40 percent, 200 deg. F. plain..1 day	.....	6,267	4,667	8,833	5,151
3 day	.....	6,842	5,533	10,014	6,060
7 day	.....	8,117	5,400	10,540	6,990
Bogue constituents, percent C_3S	58.2	68.2	63.3	59.9	62.0
percent C_2S	12.0	7.0	9.8	15.0	13.0
percent C_3A	10.6	12.7	9.3	12.2	12.1
percent C_4AF	11.7	6.3	8.7	6.8	8.8
percent $CaSO_4$	4.0	4.2	4.1	3.9	3.9

* Halliburton consistometer.

cent. Among the Mid-Continent "oil-well" cements the range is from 80 min. to 300 min.

Tensile strengths of the California cements vary as much as 50 percent, whereas the compression strengths of the Mid-Continent cements show a wider variation.

Fineness and specific surface vary considerably—the latter up to 35 percent for California cements, and up to 80 percent for Mid-Continent cements.

The Bogue constituents for California cements vary from 45 percent for the tri-calcium silicate (C_3S) to 260 percent for the tri-calcium aluminate (C_3A). These constituents show greater variations among Mid-Continent cements, and in two cases the C_3A is absent.

The calcium sulfate is held close to 3 percent in all cases.

Table 11 is presented to show the effect of temperature on thickening time and consistency. It will be noted that there are large variations in both the thickening time of various cements supposedly all of one type, and in the effect of temperature on this property. "Oil-well" and construction cements "D" and "P" appear similar in this tabulation. "Oil-well" cement "S" appears to have little sensitivity to temperature, whereas construction cement "M" is extremely sensitive.

TABLE 11

Effect of Temperature on Cement-Thickening Time and Consistency

Thickening-Time Data*

(Minutes)

	120 Deg. F.	140 Deg. F.	160 Deg. F.	180 Deg. F.	200 Deg. F.
Oil-well Cements—40-percent Slurries					
D	140	87	60	57	51
E	160	104	83	63	62
A	174	108	76	60	64
C	215	135	97	74	68
B	250	165	116	106	106
Construction Cements—40-percent Slurries					
E	90	66	46	44	43
A	112	74	55	47	47
C	128	80	61	52	48
B	130	80	60	50	49
D	135	100	65	55	51
High-early-strength Cements 43-percent Slurries					
C	59	44	40	38	...
E	63	45	43	38	...

Consistometer Data†

(Minutes)

	100 Deg. F.	125 Deg. F.	150 Deg. F.	175 Deg. F.	200 Deg. F.
Oil-well Cements—40-percent Slurries					
P	225	137	88	75	63
N	...	...	116	102	92
Q	...	...	213	144	74
S	...	...	246	240	262
M	...	...	300	235	175
Construction Cements—40-percent Slurries					
M	164	103	58	44	17
N	212	145	96	71	45
P	229	150	98	72	49
Q	213	128	99	60	41
R	261	152	102	73	33

* The Texas Co. (1936-37).
† Humble Oil and Refining Co. (1938-39).

Conclusions

The need for suitable methods of testing cement for oil-well work has been brought out, and methods described. It will be noted, especially in the case of the methods of determining the allowable time that a cement may be pumped, that special testing equipment has been developed. As this test is considered as reflecting the most important characteristic of oil-well cement, it is felt that the industry would benefit if the test and apparatus were standardized. The committee feels that both pieces of apparatus described have certain features, but that either could be improved. It would be highly desirable to design a "thickening-time tester" that would meet with the approval of all interested parties, and standardize the method of making the test in order that this property of a cement could be defined by the specified test unit.

The desirability of formulating an American Petroleum Institute code for testing cements for use in oil wells is indicated.

Acknowledgments

The subcommittee acknowledges with thanks the assistance rendered by J. V. Kehoe, draughtsman with Richfield Oil Company, in the preparation of the curves and sketches; and to the following cement manufacturers for their cooperation in making tests requested by the subcommittee for the preparation of Tables 5 through 10: California Portland Cement Co.; Longhorn Portland Cement Co.; Lone Star Cement Corp.; Pacific Portland Cement Co.; Riverside Cement Co.; San Antonio Portland Cement Co.; Santa Cruz Portland Cement Co.; Southwestern Portland Cement Co.; Trinity Portland Cement Co.

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HERE'S WHAT HAPPENED IN A SOUTH TEXAS FIELD!

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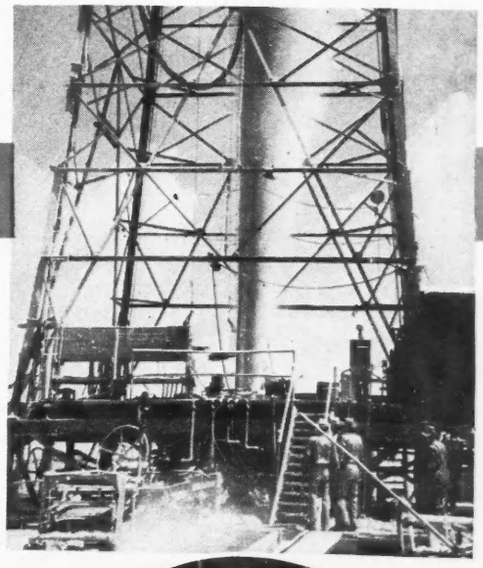
The obvious conclusion to be drawn from this incident is that equipment designed to withstand substantial cutting action and still seal off tightly is worth whatever it costs. The Cameron self-feeding ram packing element is forced to flow to the pipe, where it makes a pressure tight seal. Each packing element contains many cubic inches of rubber, or neoprene, in reserve which, as needed, is automatically fed out to the pipe. This is but one of the numerous features of superiority of Cameron Type SDA Blowout Preventers, the complete dependability of which has won the unqualified endorsement of men responsible for the safe drilling and completion of high pressure oil wells.

Complete details will gladly be forwarded to any operator on request.



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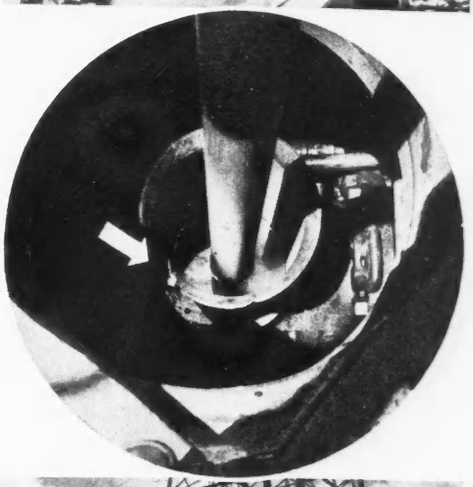

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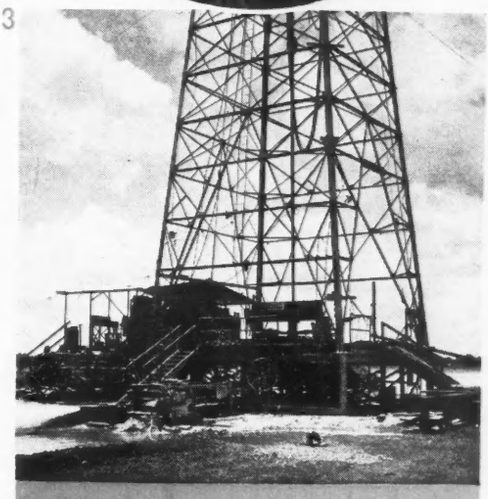

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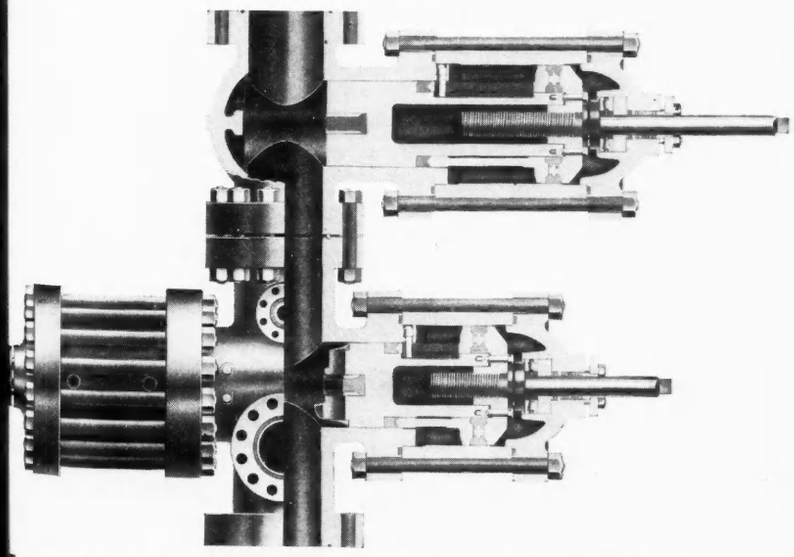

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3. **After closing the Cameron Preventer, pressure was bled off through a casing head outlet.**

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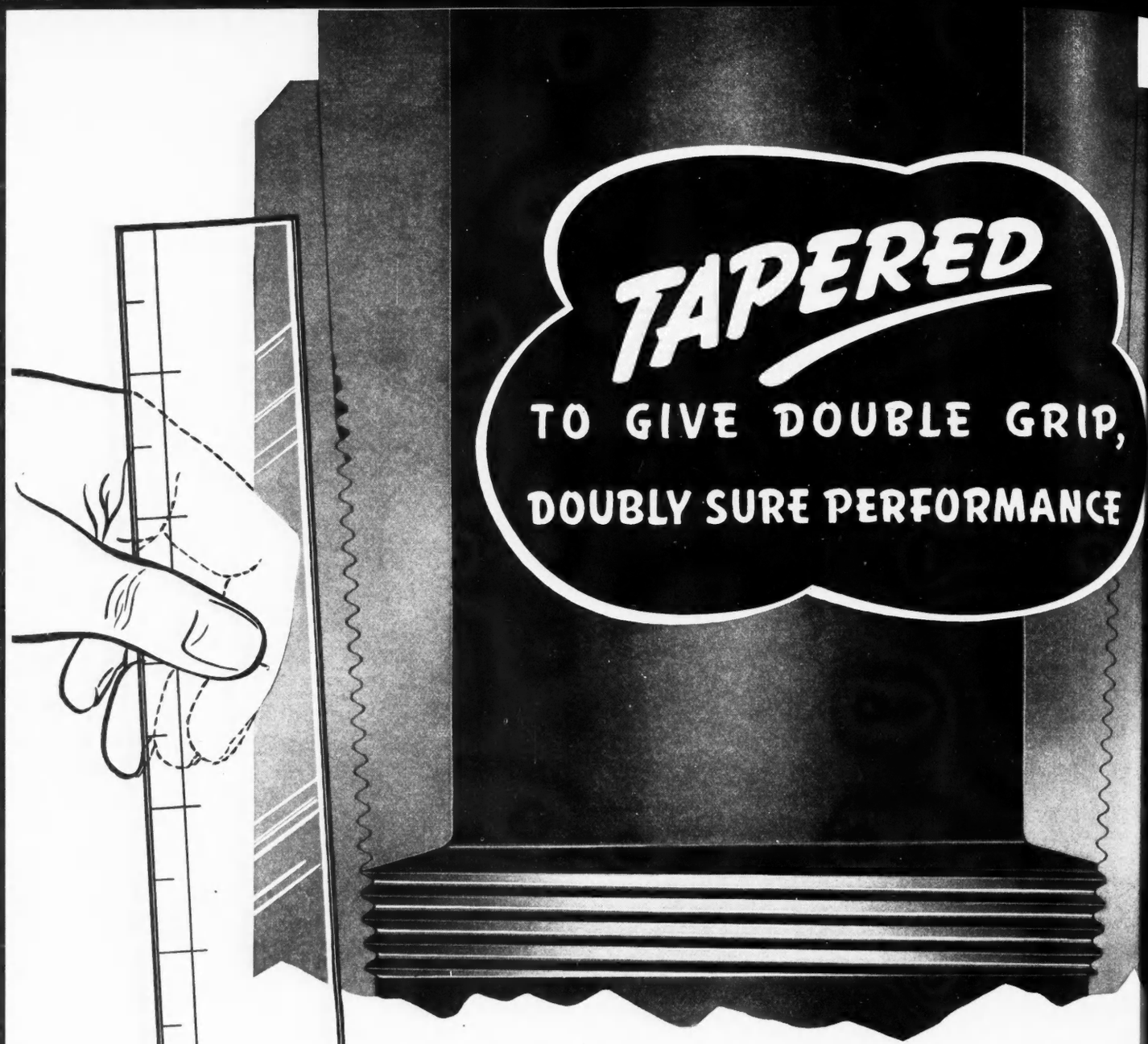

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The engineer, the manufacturer and the pumper must work together, or the best of equipment will be of little value.

Don't Overlook

Human Element In Pumping Efficiencies

By FRANK B. TAYLOR, Staff Writer

NOT all the problems of bringing crude to the surface have to do with the mechanics of lifting. There is a human side to this department of the oil industry that is as important as good equipment and sound operating methods. The human side is keyed from three angles, and neither can carry on without the aid and active cooperation of the other two.

The most expensive up-to-date equipment available, the best engineering advice, and good practical pumpers with years of experience do not guarantee either efficient or economic production—unless there is proper direction of effort and a closely knit unity of purpose. The effort cannot be directed by hard and fast rules, nor can unity be obtained by treating every situation according to some routine method or standard. A system is required . . . in the field . . . over the engineer's desk . . . in properly selecting equipment, but the system without direction is of little value. Men make things go, not systems.

The three-sided production problem is divided between the manufacturer's representative, the oil company's production engineer, and the pumper in the field. They compliment each other when production problems are held to a minimum and lease operations are held at a high level of economy in terms of barrels of crude brought to the surface.

In the old days of pumping production, the three sides of the triangle were separate, with little or no unity between any of the three. Progress and the necessity for lowered lifting costs brought the three together, to the unquestioned benefit of each. This is factually shown in lifting costs, which have decreased generally to 1/3 and almost invariably to ½ what they were 10 years ago.

In the old days the most oil in the least time was the aim of every producer. Every pumping well was the same; all were treated alike. If a well wouldn't pump there was nothing to be done about it. If water increased out of proportion to the crude, the hole was abandoned. There were few variations in equipment and pumping practices, heavy equipment was put on 3000-foot wells and light equipment on wells to 1500 feet or less. The pumper was king of the lease, but too often took orders from anyone who happened around. The engineer was getting into the swing of "whys" and "wherefores" but so far hadn't attempted to apply them to production. The manufacturer was building equipment according to a standard that had proven successful in a majority of fields, and no one cared about specific problems of an individual well.

Those days are long gone. Skill in the field and engineering progress by both company and manufacturer have made well studies individual problems with many possible solutions. Competition, the necessity of high ultimates, lowered lifting costs, conservation of energy within the reservoir as a sound operating practice but not merely to satisfy some legal stipulation, proration; all these brought about a radical improvement in equipment, methods and men. Many producers feel that they are only now getting a good grip on what has already been developed. And this grip comes by way of the engineering department where facts and figures are put to the test of economy.

The Engineer

The engineer is the go-between between trouble and solution. The production problem is tossed squarely in his lap, and it is up to him to find an answer satisfactory to the management and to the production department. It must be both economic and applicable after examining conditions recorded. If his solution fails, he can't pass the buck.

So far as the oil company is concerned, high marks in school do not make a good engineer. There is far

more to it than that. Engineering skill is essential but in addition the man must have tact, diplomacy, and the ability to get along. There must be an understanding and appreciation of the other man and his problems; the human angle. He must be able to solve the engineering problems, but also must be able to direct practices so that a unity of purpose results.

In past years it was considered good policy to take a new graduate engineer and put him immediately to work on production measures. In such cases the average man was cocky, self-sufficient, lacking in common and practical understanding of the problems of those about him, and without the ability of being able to talk to the field men in their own language. There is little wonder then that strained circumstances resulted frequently. There was no human unity of thought or effort.

Today's engineer has the same or better education, but instead of going immediately into the engineering department of a company is more apt to be put on a roustabout crew. Here he learns the field terms and expressions, and as a pumper he learns by actual practice the problems and characteristics of the pumper. He sees what the company is endeavoring to do from the bottom, and if he doesn't spout off too much before he is moved into the engineering department, he leaves a group of sincere friends in the field. More important, he knows what they know and more, and can talk with them on a common ground. As a junior member of the engineering department, constantly working with production men, he widens his knowledge of actual field conditions and begins to apply his specialized knowledge. In a way the build-up tends to soften his self-esteem, allows him to more fundamentally evaluate himself in respect to others, and gives him the opportunity to actually prove himself.

As a single spoke in the production scheme, the engineer has his hands full with today's problems. There are few more strenuous jobs in a company.

In the matter of selecting equipment, the engineer must draw on experience and knowledge. Where this cannot be done, he usually has either one or two alternates. The first is to accept the claims of the manufacturer's representative, always keeping in mind the applicability of the equipment to the particular job. The second alternate is to accept the equipment on trial, or to thoroughly test before putting in operation. The last of the means is usually impractical. Most engineering departments do not have time or equipment to make comprehensive tests of various classes of pumping equipment. Limited testing of equipment is no basis for final judgment. In the matter of time, he usually has insufficient help of a technical nature, and frequently has qualified engineers doing the work of an office clerk.

Put out in the field on trial, the engineer must see to it that equipment is given a fair, impartial test under conditions of operation that can be judged correctly. The pumper must be informed as to the manner of application and operation. Records are usually necessary. After a fair trial the device may be either recommended or condemned. This process of trial and error is costly. In cases where there is a choice in equipment, the engineer must make the selection not alone on the basis of which will do the work best, but which will do the work best in terms of cost per barrel of production. In this he is working hand in glove with the production department, a practice of operation becoming more and more prevalent and reducing the number of superiors to which the field man is answerable by concentrating direction in one department.

In production practices, the engineer has a continual problem. Each well must be analyzed carefully, both for the best application of equipment and for the best operating procedure. Then as production gradually decreases, the operating method must be changed to agree with the new conditions. Proration enters the picture by limiting pumping hours and volumes of fluid.

When a manner of production differs from that formerly applied, the engineer must thoroughly sell the pumper on the change. If it is only an equipment change, the pumper should be given pertinent facts on the various "whys" of operation, not merely told to do this and do that. With reasons clearly expressed in non-technical terms that explain the desirability or necessity of the change, the engineer must convince the pumper of the new values of the application. Then, with this "salesmanship" accomplished, the pumper will follow to the letter any engineering advice.

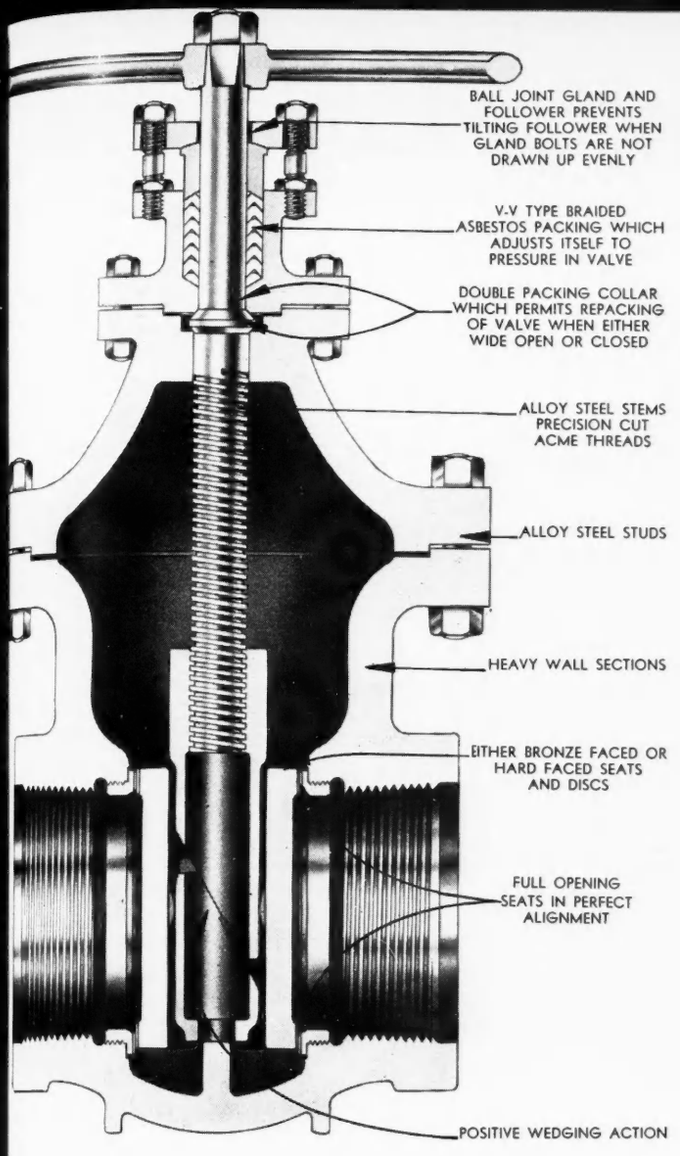
Engineers are burdened frequently with a mass of routine and detail that seriously handicap their potential value to a firm. One engineer in a responsible position states—"Fully half my day is devoted to checking routine equipment orders, compiled production figures, safety measures, proration and other hearing results; part of the balance seems to drop from sight and at the end of the day only two or three hours has been spent on actual engineering either in the office or in the field." The opinion seems to be that relief from over-abundant routine would allow the production engineer to more closely examine production problems, and that recommendations resulting from such added time would more than balance the cost of putting the routine somewhere else. There must be a happy medium in engineering duties, but just where to draw the line is a big question.

The Manufacturer

Fundamentally, the chief aim of the manufacturer is to sell equipment. More practically, the chief aim is to make available to the producer equipment that is dependable and that most accurately meets the producer's particular requirements. In this way the manufacturer guides his activity by entering into an un-apparent partnership with the producer.

From the outside, it appears that the manufacturer is only concerned with putting out good equipment and then taking orders for it when it is needed. This is true in a very limited sense. Part of pumping progress is through the introduction of new and improved equipment into the field, and to introduce new equipment the manufacturer's representative must detail the advantages of a device to the engineers, and frequently to the pumpers. The engineer, on the one hand, is too much of a scientist to accept as fact all the statements made by the representative; on the other hand, he must gauge the relative value of the new device on a basis of improved economy. Acceptance of claims by the engineer is largely dependent upon past experience with the firm and representative. If both have proven dependable in the past, half the battle is already won by the representative. There is no substitute for this attitude of dependence.

Familiarity with a producer's problem is a modern requirement of the representative. Not only does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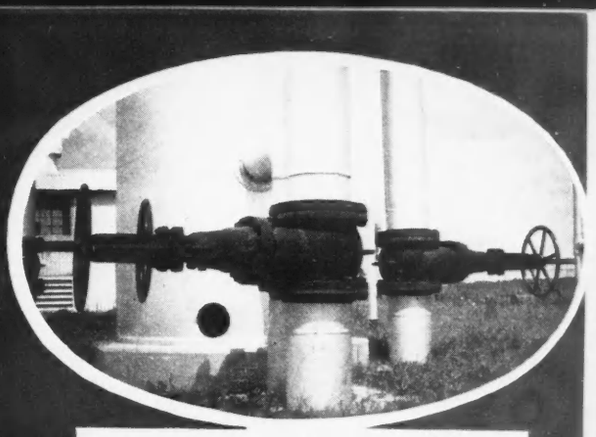

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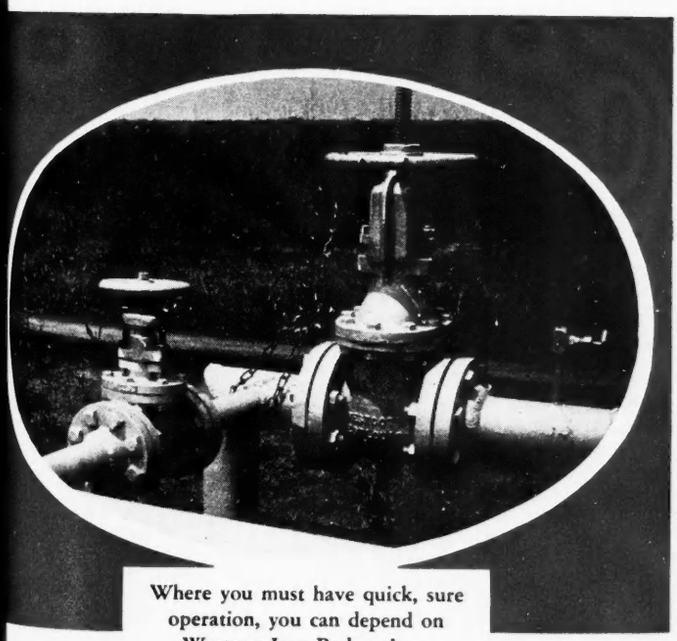

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the engineer appreciate this, but he can discuss with the representative possible improvements in his line, advancements that will more accurately meet field requirements. In turn, the better representatives keep the engineer informed on new methods, manufactured devices, and effort to improve equipment. This is often termed pre-selling, but actually is an effort toward a unity of purpose.

Delivery does not complete an equipment sale. Provided that the device was chosen and suitable properly, it is up to the manufacturer to see to it that the field man understands its operation and proper maintenance. There is much to getting a new pump unit or other equipment started off right. Foundation or other types of connections must be in order. Specialty men must give attention to specific lines. The pumper must be sold.

Not so much anymore, but in the past there was a tendency for new equipment to somehow become wrecked in the field. Told to "give it a good try" by the engineer, the pumper would do so with results that were sometimes remarkable. Such abuse of new equipment under trial is just about a thing of the past. The change was brought about by complete and careful explanations to the pumper as to manner of operation, internal workings and limitations of a piece of equipment under test. By such effort the natural prejudice to anything new was broken down.

An important side angle of the representative's work is to keep contact with the men in the field actually making use of his firm's products. He must listen sympathetically to their complaints and suggestions, for through such discussions may come definite product improvement in addition to bettered relations.

The high-pressure, high-powered sales talk of the representative has given way to fact and evidence. The old order to "sell him" has given way to "sell him what he needs." There is a difference. There are still a few of the classical order of salesmen in the field, and the engineer in the office usually can trace their movements through an area by the requisitions that come to his desk from the field offices. This type of selling does not last long in comparison with cooperative effort.

The Pumper

It is the man out in the field with a grease rag in one hand and wrench in the other that keeps equipment running and follows advice from the production engineer. He is proud of his work and proud of his lease. He is going to try to get every last barrel of production possible from his wells. And if something goes wrong, there is no place to pass the buck.

The analysis of pumping problems is not alone an engineering or manufacturer's task. The pumper often makes the first analysis and mentally seeks a solution. If his opinion is asked he usually gives it freely, and although his advice or thought may not be followed, he remains anxious to solve other field problems only if his ideas are accorded serious consideration. If slight attention is given him, the next time his opinion is asked he may hesitate to express his honest convictions.

In general operation of a lease he is dependent upon the production department or an engineer for direction But the direction is only partly effective if it comes to him in the form of unexplained orders. What he wants to know is "how this works" and "why that should be done." One engineer, when writing a note to one of his production men in the field, adds the PS—"I'll be out to see you on this as soon as I get a chance."

The more the pumper understands as to what he is actually accomplishing on the lease, the less routine the work appears—the more interest he has in operation. A pumper taken off a gas repressuring project voiced the comment, "I sure hate to make this transfer. It was the most interesting job I had with the company." The engineer in charge of the secondary recovery measure regularly visited the field and explained as far as he could each application of the system. And of the engineer, who later left the firm to establish himself as an independent consultant, the pumper said, "He was a smart engineer and a go-getter. If something didn't work he would try something else until it did." This particular engineer, now in Kansas, admitted error and consulted freely with the pumpers.

In equipment or method trials, the pumper wants to know how the equipment operates or what advantage the new method may have. If he fails to receive any such advice then he considers it just another new gadget and as such he is prone to be prejudiced even before a preliminary trial. The pumper holds in suspicion most new departures. This is chiefly due to his lack of contact with basic experiment, mechanical and physical laws and trends of advancement. For an unbiased trial of any method or piece of equipment there is a psychological attitude to be obtained.

The pumper wants orders on what he is to do; not too many of them, but sufficient so that there is no question in his mind as to exactly what the production man in the general office expects. Also, he does not want orders to come from just anyone in the company having a yen to sign a field order. Much embarrassment has been eliminated in one company by relating the engineer to the production department so that instruction to the field has only a single source.

In his effort to correctly operate a lease, the pumper also wishes to keep his house in order. Minor supplies sometimes trouble him. Rags are slow in arriving. Particularly in areas of old production, it is difficult to obtain new tools or replacement parts of damaged tools. The pumper often feels that the company wants him to "get by with anything." When ordered equipment is tardy, the pumper feels that lost production resulting from a shut-down reflects upon himself.

The average pumper realizes he is fundamentally handicapped through lack of technical education. It is difficult to balance this with experience.

The pumper that doesn't give a rap why a device operates or how a method is applicable has reached his best job. But the majority of pumpers are anxious to better themselves and will work to do so. Not only will they do what is required but will likewise do whatever else they see should be done without the necessity of an order.

They want the facts, just as the engineer. However, they are prone to hesitate in the asking of questions, not because of lack of interest but because they feel they expose themselves when they plead ignorance of what may be a simple function. Directly in this line falls advancement of practices. In the experience of the pumper many changes do not seem justified because they have been "getting-by" with the old method for years. But explanations will usually clarify this situation.

ANNOUNCING

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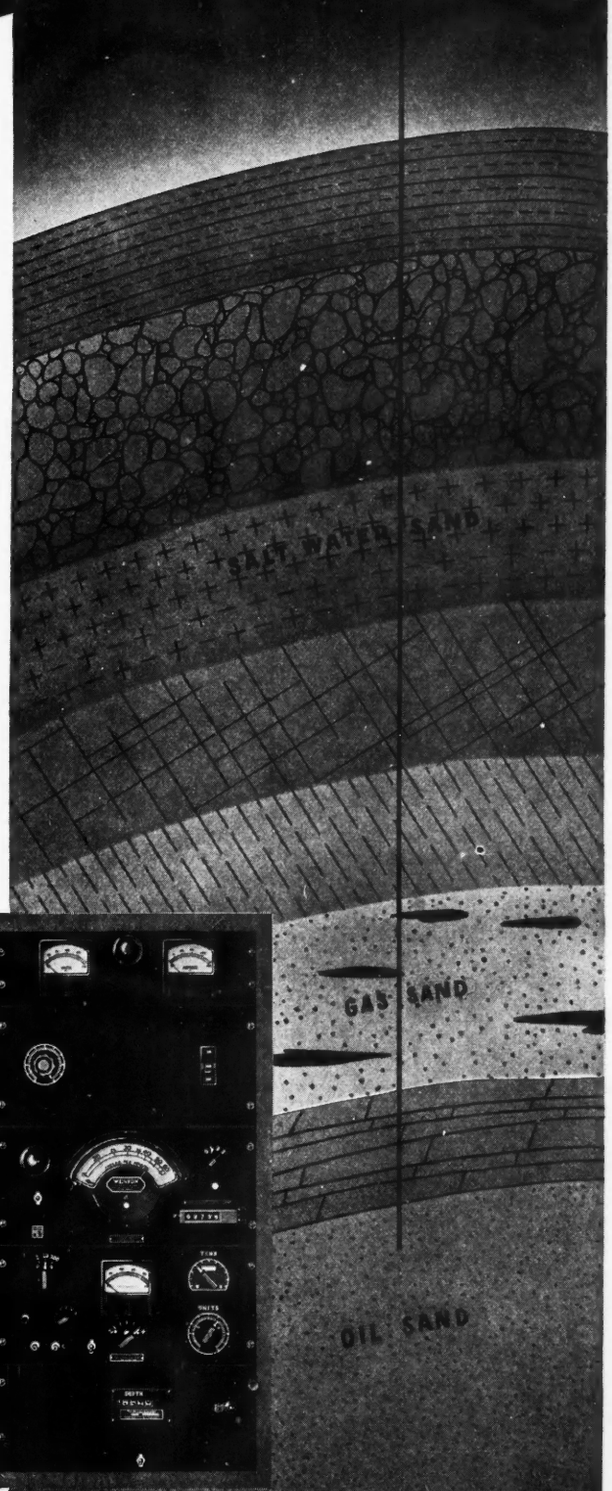

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WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Southern Alberta structures attract development

Northwestern operators interested in the productive possibilities of the west flank of the Sweetgrass Arch in Southern Alberta are watching closely a current campaign to prove 4 structures just north of the Cutbank, Montana, field.

The structures, all basinward domes on the west flank of the arch, are Twin River, Del Bonita, Ross Lake, and Spring Coulee. Discovered in 1929 by Nordon Corporation of Alberta, and semi-proven, in the case of Del Bonita and Twin River, by faulty completions, the four domes are underlain by the same formations as is Northern Montana and are characterized by folds comparable in size, steepness of dip, and structural characteristics with those forming the Oklahoma City, Yates, Big Lake, and Hobbs fields in the United States. All four are well detailed by reflection seismograph shooting. It is the opinion of Alberta geologists that these four structures are the best prospects in the province.

Present activity in the area embraces a reflection shooting program at Ross Lake; the earmarking of $100,000 by E. L. Cord and Terminal Oil Company of Seattle for development of the Twin River and Del Bonita domes; a deep test now drilling upon the Del Bonita prospect, and the spudding of a test upon Spring Coulee by the Cord-Terminal combine.

Since it has been demonstrated by surface geology, core drilling, and reflection shooting that the four structures are similar in several respects, it appears that a strike upon one would lead immediately to activity upon the others.

With a second major field necessary in Alberta to induce development of an outlet system of sufficient proportion to enable Canada to share in the Empire markets, the Del Bonita and Spring Coulee tests are coming in for a great deal of attention as they deepen. A resume of the situation and activity on each prospect follows.

Spring Coulee

Spring Coulee is 50 miles northwest of Cutbank, Montana, and 35 miles south-southwest of Lethbridge, Ontario, in Townships 3 and 4, Range 23 west. Axis of the structure is parallel to, and 8 miles east of axis of Alberta Syncline; 42 miles west of axis of parent fold, the Belly River (Sweetgrass) arch. It is approximately 7 miles long and 2½ miles wide.

Alberta Pacific Consolidated No. 1, drilled in 1929 low upon north flank of dome to 6191 feet, coring 90 feet of clean oil zone in the upper Madison before going into water. All cores recovered from 5937 feet to 6033 feet contained live oil. This situation is similar to that in the Kevin-Sunburst field, but different from that found in most southern Alberta wells, in that they have generally encountered barren limestone in the upper part of the Madison section.

Western Drilling Company's Spring Coulee 1 is standing with 10-inch surface pipe cemented at 600 feet. The test is being drilled with what is probably the most expensive set-up ever employed in Alberta. Two large Diesel engines, 200 and 175 horsepower, are compounded and unitized with heavy-duty drilling equipment. The test is so located that the top of the Madison is expected 250 feet higher than in the A. P. Consolidated well, yet low enough on structure to avert trouble with the expected gas cap. Possibilities are expected to lie in the Milk River between 2500 and 2700 feet; in the Blackleaf between 4740 and 4760 feet; in the Blairmore at 5500 to 5510 feet (equivalent of Sunburst sand at Cutbank and Kevin-Sunburst), again in the Blairmore at 5720 to 5740 feet (equivalent of Cutbank sand at Cutbank); and finally in the Madison lime at 6000 feet.

Leaseholders in the area include Wheatmen Petroleum, Ltd., Del Bonita Petroleum Company, E. L. Cord, Sound Cities Gas & Oil Company, and Utah Oil & Refining Company.

Del Bonita

Del Bonita is 32 miles northwest of Cutbank, Montana and 46 miles south-southwest of Lethbridge, Ontario. This structure occupies the same position with respect to the Belly River Arch and Alberta Syncline as does the Spring Coulee prospect. It is 6 miles long, 3 wide; short, steep east flank, west flank extending to the axis of the Alberta Syncline. Closure expected to be 100 feet on the Madison.

Terminal Oil Company's Del Bonita 1 was drilled 109 feet into the Madison to 5136 feet where bottom water came in. The well now has a varying flow of 30 to 100 barrels a day of 35-gravity oil and 2 million cubic feet of gas. The liner was cemented from lead wool plug to casing, but the cement apparently channelled under the high pressure (1700 pounds shut-in) and the gas/oil ratio cannot be controlled. Acidization had a marked effect upon production. The oil is being used without refining in the Spring Coulee well engines. The gas is used to fuel the rig at Terminal Del Bonita 2.

Terminal Oil Company's Del Bonita 2, 18-1-21w-4, drilling in the Blairmore at 4300 feet, has encountered shows in the Milk River at 1900 feet, and gas and oil in the Blackleaf at 3450-4300 feet. Top of the Madison is expected at 5140 feet. A flow test will be taken within a month on this important semi-wildcat.

Leaseholders include Terminal Oil Company, Wheatman Petroleum, Ltd., and E. L. Cord.

Twin River

Twin River is 9 miles east-northeast of Del Bonita and 5 miles north of the international boundary. It is higher on flank of Belly River Arch than either Del Bonita or Spring Coulee.

Parco Oil Company's Twin River 1, 34-1n-20w, drilled 40 feet into Madison, encountering considerable oil and gas that could not be gauged as bottom water entered rapidly.

Roney-Nordon's Twin River 2, drilled 47 feet into Madison to 3945 feet. Initialed for 50 barrels of 31-gravity oil and several million cubic feet of gas, but was junked by bottom water, a nitro shot, and a stuck perforator. Reconditioning attempts now in progress will convert it to a gas well if the perforator proves inextricable.

Ross Lake

Ross Lake is a southeast extension of Spring Coulee. Smaller in area than Del Bonita and Spring Coulee, this structure is characterized by steeper dips, greater closure, and a larger gathering ground than the other prospects. No tests have been drilled, although Standard Oil Company of British Columbia is checking the work of Nordon Corporation with a seismic survey, and is expected to announce a location in the near future.

West Canadians watching results of U. S. shutdown

West Canadian oil operators last week were closely watching developments in Southwestern United States, hopeful that strengthening of the United States crude market as a result of shutdowns would lessen the flow of crude coming into Canada and extend the market for Alberta crude eastward at least through Manitoba.

A reduction in crude stocks in the United States and resulting strengthening of the market would move eastward the dividing line running through Manitoba which now marks the area served with products manufactured from Alberta crude and that served with products refined in Eastern Canada from crude imported from Illinois and Mid-Continent fields.

Meanwhile, crude stocks at the Calgary

refineries of Imperial Oil Company, Ltd., and the British American Oil Company, Ltd., last week totaled 450,000 barrels, representing the largest crude storage in Calgary at any one time in the history of the Alberta oil industry. This compares with storage of 200,000 barrels at the same time a year ago.

Crude stocks have been permitted to increase so that an anticipated heavy demand by farmers for fuel oil during harvesting operations may be met without opening Turner Valley wells beyond their capacity to produce under safe engineering practices. Allowable of the field a year ago was boosted to 28,000 barrels daily in an effort to meet a heavy demand during the fall months, and many wells were unable to produce their allowables. With about a score of new producers added to the field during the past year, the Alberta Petroleum & Natural Gas Conservation Board authorized an allowable of 27,000 barrels for most of the summer to build up stocks. The allowable was recently reduced to 22,000 barrels because of the danger of exceeding storage facilities.

British Columbia price fixing again in court

The British Columbia government's attempt to reduce and fix the price of gasoline sold in that West Canadian province has been stopped for the second time in less than a year. Chief Justice Archer Martin at Victoria, on the petition of oil companies, restrained the provincial coal and petroleum products control board from enforcing an order to reduce wholesale gasoline prices three cents a gallon until September 12.

A price reduction order issued by the board last October was challenged in the courts, and during the litigation the board rescinded the price cut. The British Columbia court of appeal recently upheld the act creating the board and outlining its powers, and a second price reduction order followed. Counsel for oil companies are planning an appeal to the supreme court of Canada.

Gas utility revenues show marked increase

Domestic customers served by manufactured and natural gas utilities totaled 16,154,100 on June 30, an increase of 317,400 over the number reported on the same date a year ago, according to Paul Ryan, chief statistician of the American Gas Association.

Revenues of manufactured and natural gas utilities aggregated $444,541,100 for the first six months of 1939. This was an increase of 5.8 percent from the corresponding period of 1938.

Revenues from industrial and commercial users increased 8.3 percent, while revenues from domestic customers gained 4.7 percent.

Manufactured gas industry revenues totaled $190,849,000 for the first six months, an increase of 2.6 percent from a year ago. Revenues from industrial users of manufactured gas increased 10.9 percent, while commercial revenues gained 1.5 percent. Revenues from domestic uses, such as cooking, water heating, refrigeration, etc., were substantially unchanged from the corresponding period of 1938.

Revenues of the natural gas industry for the first six months amounted to $253,692,100, a gain of 8.3 percent from a year ago. Revenues from industrial uses increased 11.2 percent, while revenues from domestic uses increased 7.3 percent.

Crown Central labor strife aired before N.L.R.B.

Hearing on charges brought by the International Oil Worker's Union, a C.I.O. affiliate, against Crown Central Petroleum Corporation opened August 24 in Houston before Madison Hill, National Labor Relations Board examiner. The C.I.O. is seeking disestablishment of the Employees Federation, which it asserts is company fostered and maintained, and certification as the sole bargaining agency for the 160 workers at Crown Central's Houston refinery who come within its province.

Both groups claim a majority of the refinery workers, while the company has professed a neutral position, and a willingness to bargain with whichever agency receives labor board certification. The Employees Federation has filed a similar suit for recognition which is, in effect, being heard simultaneously with the C.I.O. demands.

Petroleum Vocational Training Program Provides Opportunities for Better Jobs

By W. R. BOYD, JR.
Executive Vice President, American Petroleum Institute

OLDTIME oil men are looking just a little bit wistfully at the newtime oil men who are going to school and studying petroleum! In the old days they learned their trade in the oil fields. They had a 12-hour day to find out how to do things, by watching others and by being told. And they had to catch on fast, for keeping the American people supplied with an uninterrupted flow of oil and its products is no easy task.

Working days are shorter now. And jobs are more specialized. There's machinery to do the heavy work. But the demand for skill and for brains, is just as big as ever, and so this big industry has undertaken a vocational training program designed to make its people better workers and qualified to occupy better, higher-paying jobs.

The schools are the results of cooperative efforts of oil-state educational departments and of the industry. Enrollment runs into the thousands.

Opportunity for the Asking

Wherever he works, whatever his problems are, opportunity for technical training today is the oil man's—and virtually for the asking. Working models and talking pictures supplement textbooks, which have been written by men who started at the bottom and worked up.

The program may give no oil man a smattering of Greek, Latin, or any of the classics, but it is so practical, flexible, and workable that he can fit himself for a bigger pay envelope, and get a better job right in his own business. Courses so are planned that the man who had to leave grammar school to go to work can start in right where his education left off and continue his studies. But he'll not be aiming wildly. What he learns is tied in with his job; fundamental principles which govern the industry's operations and which he can use immediately.

Practical Industrial Courses

He may begin with a review of grade subjects, for instance, continue with elementary and advanced mathematics and top off with elementary science. If he wants to go farther there are general courses on operation and maintenance of steam and electric power, surface pumps, compressors, internal combustion engines, and motor vehicles.

Advanced special courses prepared for those interested in drilling wells and producing oil include rig building, pulling wells, emulsions, paraffin problems, methods of lifting oil, leases, natural gas production, natural gasoline manufacture, blueprint reading, oil field transportation, and petroleum geology. In these courses safe practices and trouble analyses are stressed.

New aspects of the industry's development are seen in courses on air conditioning, and refrigeration, now in preparation. Special courses for radio technicians and Diesel engine operators are being considered. There is no lag between the technical training of the employe and the technical development of the industry.

Classes Started Readily

Whenever 10 men decide they want vocational training, a class can be organized and teacher chosen. Frequently he is a local oil man. After a $2 registration fee is paid to cover local expenses, the boys get together on a regular schedule, select their subject and talk it over—oil field style. Classes are held at night in local schoolhouses.

"Teacher" asks for suggestions and the boys fire away, an oldtime custom in the industry. In fact, it dates back to Colonel Drake's talks with Uncle Billy Smith on the problems of drilling in Titusville, Pennsylvania. If the teacher wants to put on a few extra flourishes he himself can take a one-week course in teacher-training and group-discussion methods.

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Each lesson is developed as a unit from problems which arise in the oil fields and really interest each man, regardless of previous training or background. "Mathematics B-2," for instance, the famous course in "oil field math," is popular even with graduate engineers because it gives them practical information on operating methods. The boys in the "roustabout" gang like it because it gives them an understanding of well-production records, made the more important by proration schedules. More than 6000 copies of the "math" textbooks have been distributed in 15 states in the last two years.

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MEN IN THE INDUSTRY'S NEWS

J. ALVIN **GARDNER** of Gardner Bros. Drilling Company, returned to Dallas headquarters late last week after checking drilling activity in the Salem district, Illinois, where the firm is operating two rigs.

W. J. **BUDD,** scout for the H. L. Hunt interests and stationed at Alexander, Louisiana, accompanied by his wife and son, spent the past week vacationing at San Angelo, Texas, where they formerly resided.

MILTON M. **COOKE,** who has been in the Lake Maracaibo region in Venezuela as petroleum engineer for The Mene Grande Oil Company for the past year, returned to the states August 22, to resume his work in this country. Cooke is a graduate of Texas A. & M. College, and prior to his foreign service was connected with Mike Halbouty of Houston.

PAUL L. **LYONS,** chief scout of Stanolind Oil and Gas Company, Tulsa, is vacationing in California.

RALPH **ARNOLD,** geologist of Los Angeles, and Dr. F. F. Hintze, geologist of Salt Lake City, checked development last week in the Lloydminster field on the Alberta-Saskatchewan boundary.

PAT **CLANCY,** Elmer Cameron and "Curly" Young, who have been engaged in oil well drilling in Turner Valley, Alberta, during the past 10 years, left Calgary for Trinidad last week to serve with Trinidad Petroleum Company.

O. S. **CHAPIN,** vice president and general manager of North Continental Oil & Gas Corporation, left Calgary, Alberta, last week for New York in connection with business of the West Canadian Company.

W. S. **HENDERSON** last week was named managing director of Anaconda Oil Company, Alberta operating company. He has served as acting managing director since May 8, when he took over the duties from A. J. Scott.

LOREN **CRUM,** geologist-operator currently active in Illinois, arrived in Wichita, Kansas, last week. He expressed the view that the best interests of the industry would be served if Illinois joined with other states in the shutdown.

ED **HOLLYFIELD,** El Dorado, Arkansas, oil operator and member of the Arkansas Oil and Gas Commission, visited New York recently.

CLAUDE L. **JETT,** chief scout for Imperial Oil & Gas Products Company, has been transferred from the North Louisiana-Arkansas territory to Owensboro, Kentucky.

L. G. **HUEY** of the land and scouting department, Magnolia Petroleum Company, Shreveport, has been transferred to Mattoon, Illinois. He was succeeded in Shreveport by Robert Harless, transferred from Dallas.

W. F. **KNODE,** Texas oil engineer and member of the engineering firm of Parker, Foran, Knode & Boatright, has left the chairmanship of the Alberta Petroleum and Natural Gas Conservation Board to engage in private consulting practice in Alberta. Dr. B. B. Boatright, his associate, has been in the west Canadian province for a large part of the past year. Knode was brought to Alberta by the provincial government last year and is credited with being responsible in the main for establishing conservation machinery in the Turner Valley field. Until a successor is named, C. W. Dingman will serve as acting chairman of the board, with F. G. Cottle completing the board.

S. G. **REDFEARN,** Wichita, safety director for the Globe Oil & Refining Company, has been re-elected president of the Munsch National First Aid Instructors Association. The organization was founded in Kansas a year ago to train first aid instructors in promoting safety, and has since spread to other states in the Mid-Continent.

Other offcers are: L. E. Jones, Chase, Phillips Petroleum Company, first vice president; Leo Reed, Lyons, Diamond Salt Company, second vice president; Cecil Jones, McPherson, Stanolind Oil & Gas Company, third vice president, and Harold Moore, McPherson, Shell Oil Company, secretary-treasurer.

Executive committee members are: E. E. Gibson, Chase, Shell Oil Company; K. C. Brooks, El Dorado, Cities Service Oil Company; H. C. McKnight, Madison, Cities Service Oil Company; Harold Colvin, Russell, Cities Service Oil Company, and Adolph Shindler, Augusta, Socony-Vacuum Oil Company.

JOHN **GORDON,** general manager at Monroe, Louisiana, for Interstate Natural Gas Company, is spending his vacation in Alberta, Canada, his former home, and at other Canadian points.

S. A. **PACKARD,** chief geologist at Shreveport, for Arkansas Fuel Oil Company, and his family, is spending a vacation at Santa Fe, New Mexico.

L. S. **HARLOWE,** production superintendent for Grogan Oil Company, Shreveport, with his family is spending his vacation in Colorado and other Rocky Mountain states.

O. R. **SHARP,** member of a drilling crew at work on an Humble Oil & Refining Company lease in the Sand Hills field, West Texas, lost an arm and the other was fractured August 21 when he became entangled in the machinery while the crew was running tubing. He resided at Dublin, Texas.

LOUIS C. **ROBERTS, JR.,** has resigned as Louisiana-Texas division geologist of Stanolind Oil & Gas Company to establish Houston offices for private consulting practice. Roberts' 8 years with Stanolind were preceded by service with Maracaibo Exploration Company, Rycade Oil Company, and Southern Crude Oil Purchasing Company.

CLARENCE T. **SMITH,** Flora operator, was named president of the Petroleum Association of Illinois when directors met at Springfield last week. He succeeds Ray Hose, who continues on the organization's board. Also named were Samuel Jarvis, Decatur, vice president, and A. D. Hovey, secretary-treasurer.

COMAR **PLUMMER,** of The Pure Oil Company; Rufus Putnam, chairman of the Chicago Regional Planning Association, and Wells Albade, of Consolidated Press Clipping Company, comprise a committee of the Chicago Association of Commerce named last week to investigate the state's oil industry and report to the association's executive committee.

WORTH B. **ANDREWS, JR.,** son of Worth B. Andrews, oil operator for the past 20 years of Fort Worth, Texas, has joined his father. After completing two years of special work at the University of Berlin, Germany, Andrews, Jr., returned to work in the field for Superior Oil Company during the development of the Bosco, Louisiana, field. At the completion of this work he became associated in the field with the Trinity Drillers, Inc., of San Antonio, Texas, and later returned to school to take one year's special work in petroleum.

GEORGE **CALVERT,** member of the firm of Broderick & Calvert, Inc., West Texas producers with headquarters at Fort Worth, has taken advantage of the production holiday to try his skill in snaring game fish in Canada.

HARRY D. **FRUEAUFF,** vice president of Cities Service Oil Company, was honored by 23 of his associates at a luncheon at the India House in New York last week, the occasion being his birthday.

Texas Company building new West Columbia-to-Coast outlet

Contract has been let by The Texas Pipe Line Company to Williams Brothers for construction of a 42-mile 8-inch welded pipe line from West Columbia to Webster, where it will tie into the company's line to Texas City. Work will start in about three weeks. Williams Brothers will paint and wrap the line as it is laid.

Williams Brothers last week finished a 20-mile 6-inch welded line for Standish Pipe Line Company from League City in Galveston County to Phillips Petroleum Company's terminal at Pasadena (Houston).

Humble dividend

Humble Oil & Refining Company has declared a dividend of 62½ cents a share, payable October 2 to stockholders of record September 2. For each of the first two quarters of this year the company paid 37½ cents. Thus dividends have been so far the same as last year. In the final quarter last year also the company paid 62½ cents a share, the payments for the year having totaled $2 a share.

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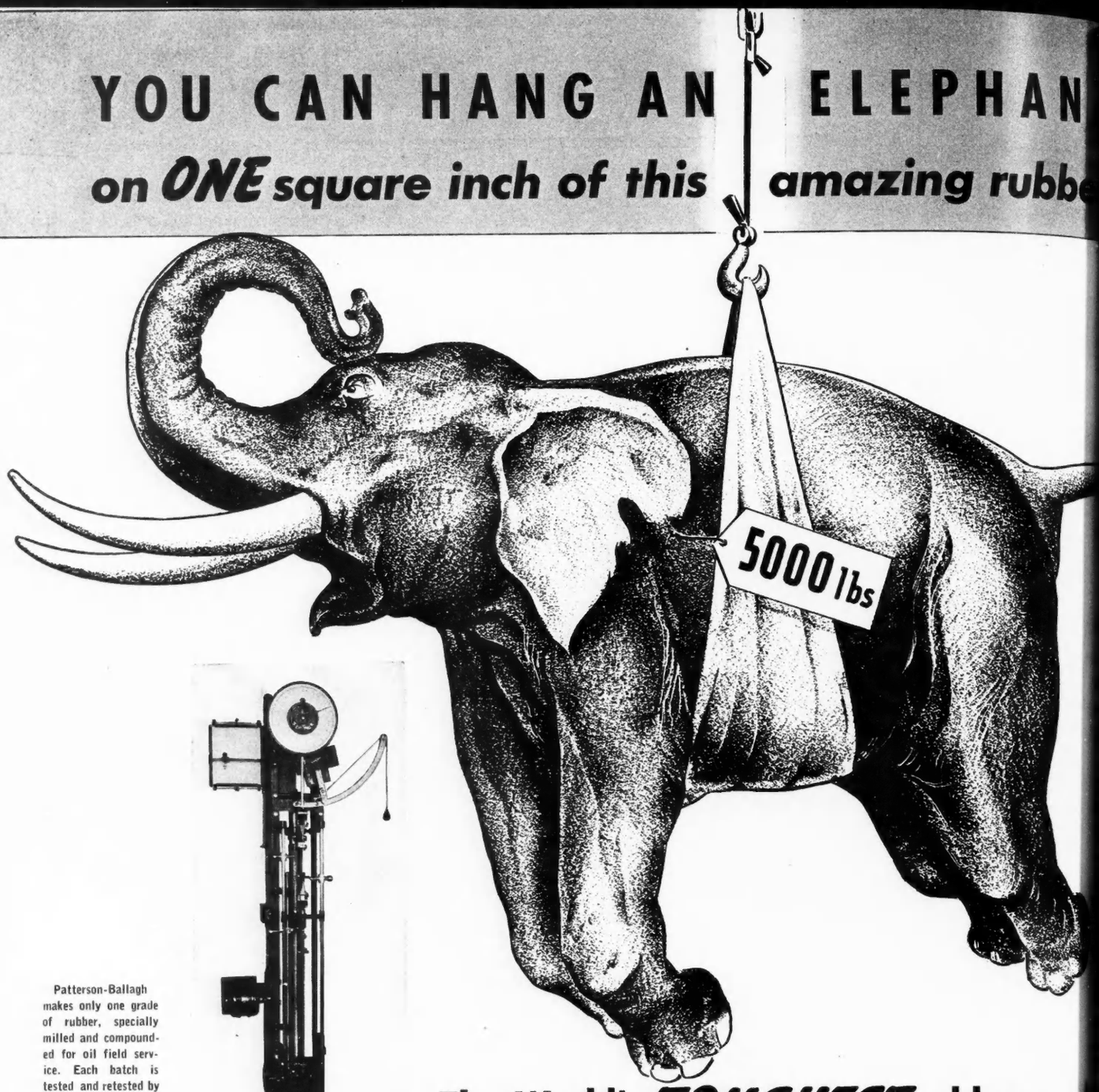

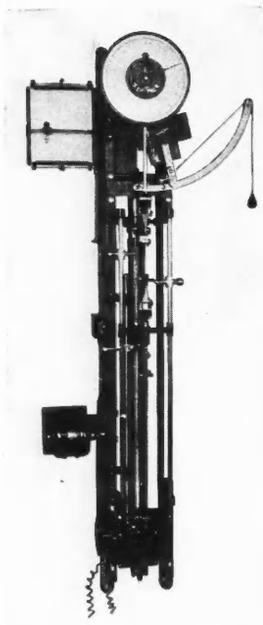

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THE WEEK'S NEWS SUMMARIZED

Shutdowns

The industry last week, three-fourths of the way through a 15-day production shutdown in six Mid-Continent states, was awaiting the outcome of several important events scheduled to take place the coming week before determining its immediate course of action in the present market predicament, created by drastic price reductions followed by the unprecedented production holiday retribution.

Whether the shutdowns would be continued or lifted when they expire on August 29, was expected to be answered August 28 when both the Texas Railroad Commission and Interstate Oil Compact Commission meet in Austin. Executives of major oil companies have been requested to be present, and to be ready to answer a 19-sectionized questionnaire on pertinent price and storage phases.

Meanwhile, there were indications that the states were to control production more closely in the future. Louisiana announced a 6127-barrel reduction for September, its lowest in months; and California adopted the same figure used in August.

Another significant development was the issuing of a 21-day emergency order in Michigan, that cuts its allowable 25 percent.

The production holidays were being followed without much protest. One concern in Arkansas and another in Oklahoma were the only instances in which appeals were taken to court, and in both instances the orders were upheld.

Prices

In consequence of the exceptional demand for refined products caused by oil field closings in the Mid-Continent, tank car prices of gasoline, kerosene, lighter fuel oils and natural gasoline increased materially during the week. Some gasoline grades have advanced ½ cent a gallon in some territories. Natural gasoline, which is particularly scarce, had risen a full cent in the Mid-Continent.

Even though the current firmness of markets is due to the temporary scarcity created by the production shutdowns, the market outlook has been brightened materially.

Two important influences giving support to the markets were (1) indications relatively strict production allowables would be enacted during September; and (2) inventories of both crude and refined oils will be at more satisfactory levels following the abnormally large withdrawals during the 15 shutdown days.

Production

Production shutdowns in six Mid-Continent states caused United States crude production to dip to its lowest level in 17 years, and to represent a decline of 2,487,000 barrels from the all-time peak established but three weeks ago. Output for the week ended August 26 averaged only 1,422,850 barrels daily.

East Texas

A new proration order for the East Texas field that will conform to recent federal court rulings is expected to be issued by the Texas Railroad Commission. Since the courts have ruled inequities exist unless acreage and oil in place are considered, it is anticipated that the new method will include these factors. Such action is thought to necessitate the raising of the field's allowable sufficiently to take care of wells on wide spacing, while keeping others above the marginal well limits. It is freely admitted that the markets cannot absorb an additional 100,000 to 200,000 barrels daily without suffering a price reduction. Therefore, the commission is confronted with the task of raising East Texas' output without disturbing the state's total. Apparently there are two methods of doing this: (1) curtailment of enough production in other areas to compensate for the East Texas increase; or (2) application of additional production holidays throughout the state. General opinion seemed to believe the latter would be followed, as it would be less likely to create a strong protest.

Louisiana Probe

Violent death of Dr. J. A. Shaw, key government witness in oil affairs, complicated the federal investigation of tangled Louisiana scandals last week. Quickly altering plans, federal attorneys began redrafting documents for the federal grand jury, which was given a two weeks vacation. Meanwhile, expected forthcoming additional oil indictments were not announced, and John Rogge, special prosecutor, returned to Washington for a conference with his superior.

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Events This Week to Determine

Two Austin meetings will decide production control course states will adopt

THREE-FOURTHS of the way through a drastic 15-day production shutdown in six states, initiated following recent 20 percent reductions in Mid-Continent crude oil prices and which removed more than half of the United States' usual daily oil yield from the market, the industry has adopted a waiting attitude before determining its immediate future course in the current crisis.

Apparently it was watching for the development of trends that would reflect a clearer picture of price and production-consumption balance prospects. These were expected to be forthcoming during the next week, when (1) figures would become available to show the influence of the curtailed production on crude and gasoline stocks during the first week of shutdowns, and individual companies began to feel the pinch for supplies; (2) pertinent data on storage and price conditions would be revealed at the Texas statewide proration hearing on Monday, August 28; and (3) the production holidays will be lifted on August 29, unless continued by the states.

Meanwhile, however, the past week was witnessing a number of significant occurrences, that included:

1. Indications that states were to control production more closely in the future. Louisiana announced its allowable would be further reduced in September by 6127 barrels, which would place it approximately 17,000 barrels below July's allowance, and 20,000 barrels under the Bureau of Mines' estimate of September demand in the area. California, which is outside of the area involved in the price cuts, will continue with the same quota. Michigan, baby oil compact and conservation law state, and a comparatively minor producing factor, cut its allowable 25 percent in a 21-day emergency order. There were discussions in some quarters of extending the production shutdowns, and different members of the shutdown state group moved to adjust exemptions to lower levels.

2. Crude oil production plummetted to its lowest level since the early 1920's as the 6-state shutdowns curtailed United States output approximately 60 percent.

3. Executives of oil companies were asked to attend the Texas statewide proration hearing on August 28, and to be prepared to testify on how the price of oil is determined, on their present gasoline and crude stocks and what they would desire them to be, and on other economic phases. A total of 19 questions were sent to a large group of oil officials, that included both majors and independents.

4. There was relatively little change in the price situation, although what small quantity of gasoline was being offered on the open market was drawing slightly higher rates. A third small oil purchasing company restored its price schedules in effect before the recent reduction, and the original price cutter, Sinclair Prairie Oil Marketing Company, after discontinuing all postings on August 18, again reinstated its reduced scale.

5. Heavily increased imports were seen as likely by the Bureau of Mines during the next few weeks because of the production strikes. This prediction was made in the bureau's regularly monthly estimate of demand, which forecast that oil consumption in September would be slightly lower than in August.

6. The production shutdowns were being followed without much protest. In Arkansas, where one firm defied the mandate, the validity of the order was upheld.

The Texas statewide hearing was being looked upon as of special significance. The highly important information revealed there by oil company officials will not only be a guide for action in the nation's largest producing district but also for other states, which have been invited to attend.

The Interstate Oil Compact Commission is to meet in conjunction with the Texas statewide hearing, and it is possible some program for extending the shutdown will be worked out if testimony indicates any favorable crude price reaction might result.

Texas asks majors 19 price questions

Preparing for the statewide hearing to begin in Austin Monday, August 28, the Texas Railroad Commission last week sent a detailed questionnaire to the nation's principal refiners. The questions are similar to those propounded at the hearing held in Austin last December when the principal executives of the largest integrated companies testified.

However, several questions have been added to permit explanation of those company policies which govern the determination of price in an effort to disclose what effect these policies may have on the present condition of the oil industry.

To that end the following questionnaire was prepared:

1. What are your present stocks in gasoline in all forms, finished and unfinished?

2. How does this compare with a year ago?

3. What has been the change in your gasoline stocks since March 31, 1939?

4. How much of your present stocks of gasoline is needed to fill pipe lines and tankers?

5. What is your present crude oil inventory?

6. How much of your crude oil stocks are needed to fill pipe lines, tankers en route? How much of it is tank bottom? In short, how much crude oil does each company have that is immediately available in tanks in condition to be dispatched where needed?

7. What, if any, changes have there been in your crude inventory since March 31, 1939?

8. What are the proper economic levels of gasoline stocks and crude oil stocks above ground at October 1, 1939; January 1, 1940; April 1, 1939? Do these figures include the oil that goes to fill pipe lines and tank bottoms?

9. What were your gasoline stocks as of December 12, 1938?

10. What do you expect your gasoline inventory to be on December 1, 1939?

11. What were your crude stocks as of December 12, 1938?

12. What do you expect your crude inventory to be as of December 1, 1939?

13. What is to be your policy with regard to inventories from now until December 1, 1939?

14. What factors does your company consider and how does it determine the price it will pay for crude oil?

15. What factors does your company consider and how does it determine the price at which it sells refined products?

16. Would your company purchase crude oil for storage under any conditions and if so, how much and under what conditions?

17. Does your company favor the enactment and enforcement of laws to promote the conservation of oil and gas in all oil producing states?

18. In the interest of conservation, does your company favor there being an outlet provided for the full production of all stripper wells before any oil is purchased from flush fields and will your company cooperate in accomplishing such an objective?

19. Does your company favor the al-

Oil's Immediate Market Trend

New allowable reductions made; indications output control will be stricter

locating of the balance of each state's allowables equitable among the prorated fields of each state and will your company cooperate in seeing that the oil is purchased as allocated and thus eliminate selective buying?

The hearing promises to be one of the most interesting the commission has called in months because two other major issues are involved: whether the railroad commission will revise the method of allocation used in prorating East Texas and whether the current order closing all Texas wells is to be extended. For more than a week the commission has held a hearing on the application of Humble Oil & Refining Company for inclusion of an acreage factor in the East Texas order. The company declined to present a definite plan.

The questionnaires were sent to the executives with an invitation that they appear personally prepared to answer all the questions. Whether all them would be called to the stand to testify could not be determined. At the December hearing some few testified, and the remainder filed affidavits upon which they were not cross-examined.

Compact to consider shutdown extension

A called meeting of the Interstate Oil Compact Commission for Austin, Monday, August 28, was announced Friday by Ernest Thompson, chairman of the commission and member of the Texas Railroad Commission.

The special meeting will be held in conjunction with the Texas statewide proration hearing to which oil executives have been invited. They will be asked to explain the recent price cut from the witness stand, and several have indicated they will appear.

Compact meetings will be held at a luncheon and a dinner Monday. Further meetings may be held Tuesday if conditions warrant. It is possible that some program for extending the shutdown will be worked out at this meeting if testimony at the hearing indicates there is not likely to be an increase in the crude price at the termination of the current shutdown. Several states have indicated their willingness to cooperate.

Michigan emergency order slashes output

Michigan, newest member of the oil compact and latest state to pass an oil conservation law, with less than 2 percent of the U. S. daily crude oil output and only .025 percent of the estimated proven reserves of the nation, last week moved to do "its bit" in the production shutdown by cutting back its allowable 25 percent more.

P. J. Hoffmaster, director of conservation and supervisor of wells, at the recommendation of the Advisory Board, made a 21-day emergency order effective August 23 that is expected to reduce the state's output by 18,000 barrels daily. This would slash Michigan's production from approximately 68,000 barrels per day to around 50,000 barrels.

At the same time, in calling a hearing for August 28 to consider making the order stand for 60 days, Hoffmaster asserted a "review of pipe line and refinery nominations indicates that Michigan production is rapidly moving far ahead of demand." While declaring that the state acted as a cooperative move with the Mid-Continent, he asserted local situation now demanded stringent proration to avert market-production balance collapse.

The reduction in output was achieved by curtailing allowables in Southwestern Michigan flush fields from 200 barrels per well to 100 barrels, and by cutting 20-acre producing units in the Temple field in Clare County from 250 to 200 barrels.

Michigan independent refiners take about 40,000 of the 68,000 barrels being produced now—the rest going to Standard and Pure refineries at Toledo; some to Buffalo, New York, for asphalt and fuel oil.

Hoffmaster "hoped" that Michigan's reduction would set an example for its neighbor, Illinois.

Expect Illinois special session to study control

Belief that production control legislation would be included in a special session of the Illinois legislature, and that its prospects for passage are better than last year, grew last week. Governor Henry Horner, who formally said he would call a special session for passage of a new old-age pension law, was reported to have asserted he anticipated oil would be considered also, and that warring factions in the industry had gotten together—which would indicate the cooperation of Illinois in production control was closer.

Stelle Opposed

Meanwhile Lieutenant Governor John Stelle, who has led the fight against production control legislation during both the 1938 special session and the recent regular session this year, condemned an "apparent attempt to coerce Illinois" into passing legislation through statements attributing the present condition of the industry to the state's booming and unrestricted development.

"I have repeatedly endorsed true conservation of our natural resources, but on the other hand, I am unalterably opposed to the passage of any legislation which has as its purpose and will in effect retard or hamper the development and operation of the oil industry in Illinois," Stelle said last week. "I resent the apparent attempt to coerce Illinois into acceeding to the demand of large and foreign interests to pass legislation designed to protect those interests, at the expense of our people.

California to keep same allowable

California's September crude allowable was set at 598,300 barrels daily, same as in August, by the Central Committee of California Oil Producers. The top quota for 492 wells was cut 10 barrels daily, the top having been set at 230 barrels daily each instead of 240 barrels daily each, as an effort to aid curtailment.

Lawrence Vander Leck, chairman of the Central Committee reported to members that for the first 20 days of August, the state averaged 619,333 barrels daily, being 17,000 barrels daily over July average for the corresponding period. During July 114 wells were completed for an estimated potential of 131,866 barrels daily. L. L. Aubert, chairman of the Allocation Committee, said that 4,500,000 barrels added to storage prior to March 1, last, has been wiped out and that withdrawals from storage amounts to 1,600,000 barrels to date.

Louisiana's allowable further cut for September

Louisiana moved along two fronts last week to further curb its production, one of which influenced the output of exemptions during the current 12-day shutdown period and the other dealing with the states' September allowable.

A further reduction of 6127 barrels in Louisiana production allowable as of September 1 has been ordered, the new allowable being 235,475 barrels daily, compared with 241,602 for August and about 262,000 for July. The

As We See It . . .

HAS the shutdown in five leading oil producing states actually improved the situation which led the shutdown? Is there any likelihood that there may be a restoration soon of the former price of crude?

A number of factors have been busily at work since the shutdown was announced. Unquestionably the shutdown will achieve a material reduction in stocks. This reduction may affect one of the companies which posted a price reduction but it will not seriously affect the others. It will unquestionably affect the smaller independent refineries who had no more than two to three weeks supply of crude on hand when the shutdown was decreed. Already smaller units are raising the ante in bidding for crude and it is probable that before the fifteenth day shall have passed many more will be anxiously awaiting lifting of the shutdown.

But these were not the companies which posted the price cut. And the aggregate of their pipe line takings will not materially affect the market's upward rise, even though the possibility that some of them bought below the market may have been a factor in its reduction.

The shutdown, whether or not it was so declared had much of the elements of a punitive measure. In the minds of some it carried the possibility of giving some companies a "bellyfull" of curtailment. But we must agree with Jake Hammon, of Dallas, president of the Stripper Well Association, when he said in a radio address last Thursday night that the shutdown was not the answer to the real problem.

Some other things have happened, however, since the shutdown which give real promise. Louisiana's new proration order to take effect when the shutdown is lifted puts that state's production more nearly in line with Bureau of Mines estimates than has been the case since there were Bureau of Mines estimates.

This reduction in allowable in Louisiana should have a genuine effect. And it seems to us that it has back of it the real flavor of conservation as well.

This Louisiana reduction, and the reduction in stocks brought about by the shutdown together should have a stimulating effect. We suspect that if any of the companies which reduced the price should raise it back, following would not be lacking.—R. L. D.

September allowable is 20,225 barrels under the 255,700-barrel daily market demand for Louisiana crude as estimated by the Bureau of Mines.

North Louisiana was given 62,488 barrels of the allowable, an increase of 51 barrels, while Southern Louisiana's allowable of 172,987 barrels represents a 6178-barrel reduction.

Stripper, pumping and gas condensate wells, exempted in the shutdown order effective August 17, were limited to 25 barrels of oil daily beginning at 7 a.m. August 23, under an order of Conservation Commissioner E. S. Clements. Previously there had been no production maximum for these exempted wells. The order further stated that any exceptions granted to this ruling, because of reservoir waste, would have to make up the amount of oil produced in excess of the figure when the shutdowns are lifted.

New Mexico to study shutdown extensions

The New Mexico Oil Conservation Commission will hold a hearing at Santa Fe August 31, at which it will consider advisability of further suspension of production in the state, following termination of the current 15-day shutdown.

Under the present program, in Lea County, particularly Hobbs, Cooper, and Jal areas, all predominantly water wells are exempt from the shutdown, but the oil produced is to be charged to future allowables. Not a great deal of oil is involved. Some of the operators are withholding such production from pipe lines by utilizing all available lease tankage.

Bureau foresees import increase following shutdown

Production strikes in the major oil producing states may result in heavily increased importations of oil during the next few weeks, it was predicted by the Bureau of Mines August 22 in forecasting a September market demand for 3,510,700 barrels of domestic crude daily.

With the future of the domestic industry rendered highly uncertain by the stoppage of production, bureau officials admitted that no accurate predictions could be made respecting production activities in the immediate future.

The bureau's forecast of a daily demand of 3,510,700 barrels of domestic crude oil, while 11,200 barrels less than the estimated demand for August, was 66,400 barrels above the estimate and 222,000 barrels above the actual demand for September, 1938.

"Although the total motor-fuel demand for September, 1939, is estimated at 7 percent above the actual of a year ago," the report explained, "the anticipated crude-oil demand is only 3 percent higher mainly because the withdrawal from gasoline stocks for this September as predicted is higher than the subnormal withdrawal as the result of the poor weather last September."

Daily average crude production for the 4 weeks July 1 to 29 was 3,564,000

barrels and runs to stills during the same period 3,424,000 barrels, the bureau stated in reviewing current conditions. During that period total crude stocks declined 2,937,000 barrels, 471,000 barrels of which was foreign, leaving a net decline in domestic crudes of 2,466,000 barrels, or 88,000 barrels a day. The addition of this stock decline to the production indicates that the apparent demand for domestic crude during July was 3,652,000 barrels daily, 139,000 barrels in excess of the bureau's estimate, a reflection chiefly of the less than normal seasonal withdrawals from gasoline stocks.

"The demand for distillate fuel oils will be a major factor in determining refinery operations for the balance of the year," the bureau commented. "For the first 6 months of 1939 the total demand for distillate fuels has been 20 percent greater than for the same period in 1938, while the total demand for motor fuel increased only 5 percent. Stocks of distillate fuels east of California were only 15,388,000 barrels on June 30, 1939, as compared with 16,516,000 barrels for the same date in 1938. If runs to stil's are to be kept at a level that will avoid excessive gasoline stock accumulations during the winter months, every effort should be made to secure a maximum yield of distillate fuel oil.

"Since the compilation of this report was started, the current shutdowns in the fields of Texas and other states were instituted," it was explained. "This shutdown will doubtless reduce the refinery demand for crude oil in August; conversely, a lifting of the shutdown should raise consumer deliveries above normal in September. However, the bureau's estimates for the 2 months combined should be adequate."

The bureau placed the estimated domestic demand for motor fuel for the coming month at 49,100,000 barrels, or about 7 percent more than the actual demand in September, 1938. Exports are figured at 4,000,000 barrels, a reduction of 200,000 barrels from the August forecast.

Stocks of finished and unfinished gasoline, which on June 30 amounted to 80,288,000 barrels, are indicated by American Petroleum Institute figures to have declined about 3,840,000 barrels during July, or to approximately 76,450,000 barrels at the end of that month, about the same as on July 31, 1938. The bureau estimates a reduction of 3,800,000 barrels in finished gasoline stocks for September.

Benzol and direct sales of natural gasoline are estimated at 900,000 barrels, making refinery production 48,400,000 barrels, which the bureau distributed as follows among the various districts:

East Coast, 6,350,000 barrels; Appalachian, 1,760,000 barrels; Indiana-Illinois, 8,630,000 barrels; Oklahoma, 2,870,000 barrels; Kansas-Missouri, 2,520,000 barrels; Inland Texas, 3,570,000 barrels; Texas Gulf Coast, 12,880,000 barrels; Louisiana Gulf Coast, 1,490,000 barrels; Inland Louisiana-Arkansas, 890,000 barrels; Rocky Mountain, 1,200,000 barrels; California, 6,240,000 barrels.

Natural gasoline to be blended at the refineries is estimated at 7.1 percent of the total gasoline production, or 3,440,000 barrels, and the yield of straight-run and cracked gasoline, which the bureau points out has been low during recent months because of the large runs of foreign crude, is estimated at 44.8 percent. The application of this yield to the production of 44,950,000 barrels gives crude runs of 100,320,000 barrels, or 3,344,000 barrels daily.

"It is possible that the suspension of production referred to above will result in the importation of additional foreign crude," the bureau pointed out. "This might be reflected in higher foreign crude runs in September; hence the bureau estimates foreign crude runs at 3,000,000 barrels in September, less than in August but far above the actual of September, 1938."

Exports of crude are estimated at 6,400,000 barrels, or 600,000 barrels less than for August. The estimate for fuel and losses is 1,600,000 barrels.

Total demand for domestic crude during the month will be 105,320,000 barrels, or 3,510,700 barrels a day, allocated by the bureau among the states as shown in the accompanying table.

Few shutdown protests; Arkansas order upheld

Although it was anticipated that many concerns would protest the production shutdown orders issued in six Mid-Continent states and owners of stripper wells and water producing wells continued to deluge conservation officials for exemptions, there was relatively little serious opposition to the closing of wells. In only two instances had protests been carried to court, and in the one in which a decision had been rendered its validity was upheld.

Arkansas Order Upheld

The Arkansas Oil and Gas Commission's shut-down order made effective August 17 was sustained by Chancellor W. A. Speer in the Union County circuit court at El Dorado August 22 when he dismissed for want of equity the suit of Lion Oil Refining Company seeking an injunction against the state oil and gas commission to restrain the commission from executing its shut-down order on Lion's 59 wells in the Schuler field, Union County, Arkansas.

Lion Oil Refining Company attacked the order as unconstitutional and confiscatory declaring while it "pretended" to be a conservation measure, in reality it was "an unlawful attempt to affect crude-oil prices." In dismissing Lion's complaint the court sustained a cross-complaint of the commission asking that Lion be cited as a violator of the shut-down order. Attorneys for Lion announced an appeal to the Arkansas State Supreme Court.

Meanwhile, the commission seized and impounded 14,700 barrels of oil produced by Lion's wells at Schuler between the time of the shutdown August 17 and August 22. The commission had ordered Lion's wells padlocked after the company defined the shut-down order but Judge Speer issued a temporary restraining order prohibiting the padlocking, until the petition of Lion for the injunction was heard.

One Oklahoma Protest

With one exception the shut-down order issued by the Oklahoma Corporation Commission was accepted and recognized by Oklahoma operators.

O. O. Owens and Thlocco Oil Company, Tulsa, with a restraining order received at the district court at Sapulpa, defied the commission in its state-wide order. Owens has approximately 25 wells producing in the Cushing field of Creek County, and contends his stripper wells will be permanently damaged if not permitted to pump off accumulating salt water.

But the Supreme Court of Oklahoma ruled that district courts have no jurisdiction to interfere with the orders of the state corporation commission under the oil conservation law. This decision prompted O. O. Owens and Thlocco Oil Company to file a formal petition before the corporation commission for a special exemption of their wells. The validity of the state-wide shutdown was yet to be tested in this higher court.

However, the court directed the commission to take no measures in shutting down the wells of the two operators before 4 p.m. Friday, August 25.

Two alternatives to which the operators may follow are: either they will have to make formal application before the corporation commission itself to obtain an exception on their wells, which Owens has done and is being acted upon; or apply direct to the state supreme court for a writ of prohibition to keep the corporation commission from enforcing the general shutdown order. Should he not be able to secure special permission from the commission, the latter course will be open.

Bureau of Mines Forecast of Domestic Crude Demand in September

STATE	Forecast September, 1939	Forecast August, 1939	Actual Demand September, 1938
Texas	1,408,300	1,428,100	1,342,000
California	596,000	595,100	651,000
Oklahoma	429,300	448,100	512,000
Louisiana	255,700	259,300	251,000
Illinois	248,700	201,900	72,000
Kansas	166,300	168,700	163,000
New Mexico	108,700	111,000	97,000
Wyoming	70,700	77,100	81,000
Michigan	55,000	54,200	51,000
Pennsylvania	51,000	52,900	48,000
Arkansas	50,700	51,900	55,000
Montana	16,300	16,400	17,000
Kentucky	15,300	15,000	21,000
New York	14,000	16,000	12,000
West Virginia	10,000	11,000	10,000
Ohio	8,000	8,400	10,000
Colorado	3,700	3,900	5,000
Indiana	3,000	2,900	3,000
	3,510,700	3,521,900	3,401,000

Market Situation

Shutdown creates supply scarcity, resulting in boosted refined product prices . . . Prospects brightened by indicated stricter output control

THE market outlook has been brightened materially by the Mid-Continent shutdowns, even though current firmness is due primarily to the temporary scarcity created by the closings.

Although prices of refined products have been advanced almost wholly because of the temporary undersupply, it seems quite probable that at least a part of the improvement will be retained after the shutdown period.

For two important influences will be giving support to the markets: (1) relatively strict crude production allowables, which are indicated for September, and (2) the more satisfactory levels of inventories of crude and refined oils, following the abnormally large withdrawals during the 15 shutdown days.

Crude Market Unsettled

The crude oil market has remained in an unsettled state, and final settlement of the question of proper crude prices probably will be delayed beyond the termination of the Mid-Continent shutdowns.

An important consideration that will be taken into account by the major purchasers will be the condition of the refined product markets after the shutdown supports are removed.

May Scramble for Oil

A bullish tone is expected to prevail, nevertheless, in the general Mid-Continent crude market when the blanket is lifted, as it is figured that big buyers will be inclined to speed up replacements of choice grades of crude, in the fear that another shutdown might occur. Anything along that line can happen until the Illinois basin gives up its head.

Spot lot buyers of crude last week were working the trade feverishly, lining up tanker quantities to be delivered when available. Such efforts centered particularly in Arkansas, certain Louisiana areas, East Texas, the Texas Gulf Coast, and Southwest Texas, where volume purchases could be made. Supplies of that type were not being actively sought, however, in North, West Central, and West Texas, the Panhandle, or New Mexico, where producers deal largely with purchasers affording permanent pipe line connections.

Refiners Raise Postings

Hope of producers that crude postings might be restored to former levels was encouraged last week when another independent refining company restored the old prices. Cosden Petroleum Corporation, Fort Worth, effective August 23, raised its postings back to the levels of its schedule prior to August 12. On that date, the company had met the lower postings made by Humble Oil & Refining Company. Cosden buys crude in Young County, North Texas, and Howard, Glasscock, and Ector counties, West Texas, purchasing about 11,000 barrels daily for its Big Spring refinery and 1000 barrels for its Graham plant.

The Cosden company issued a statement in connection with the restoration of former prices, saying that since the shutdown began there had been an advance of ¼ cent a gallon in the price of gasoline, which would permit profitable operation on crude bought at the previously paid prices.

Earlier, two other independent refining companies had gone back to the old, higher crude prices. Bell Oil & Gas Company had restored old prices in the Red River bed district on the Oklahoma-Texas border, and Danciger Oil Refineries, Inc., had raised back Panhandle postings.

Sinclair Stands Pat

On the other hand, Sinclair Prairie Oil Marketing Company, which on August 18 discontinued postings in Texas, New Mexico, Oklahoma, and Kansas, after having led the way in the Mid-Continent reductions August 10, reinstated the lower postings on August 23, retroactive to August 18. In effect, therefore, the company never discontinued the lower postings. It was indicated by the company that postings had been discontinued because production was not permitted under the shutdown orders, and that the postings had been restored when exemptions to the shutdowns were granted, making some crude available for purchase.

It was understood that following restoration of the postings, Sinclair Prairie was seeking all exempted oil available, although that was not much. In North Texas, for example, where the company had been buying about 8000 barrels daily, it was able to purchase only about 1000 barrels a day; while little or no crude was available under the shutdowns in the East Texas field, the Texas Panhandle, West Texas, and New Mexico.

Other purchasers in the Mid-Continent, meanwhile, also were keeping in effect the new lower prices that Sinclair Prairie had initiated. And it remained to be seen whether or not they would be influenced by the shutdowns to raise postings to former levels.

East Texas Oil Missed

The protracted shutdown of the East Texas field has emphasized the desirability of the high gravity, sweet crude from that area.

Major purchasers have missed this oil more than other crudes that were shut off. They had not been carrying much excess East Texas crude in storage, as they held larger underground reserves of that oil than of other crudes.

Refineries that were geared up to process East Texas oil could not switch over to sulphur-contaminated crude without subjecting equipment to corrosion, although there were relatively larger quantities of New Mexico, West Texas, Panhandle, and other sour

East Texas Proration

Commission faced with devising equitable method of allocation under recent federal court orders

With the Texas Railroad Commission hearing on the application of Humble Oil & Refining Company for adjustment of the allowable in the East Texas field concluded last week, it was the opinion of many observers that the data presented would form the basis of any new order which the commissioners may write for the area. Because the present proration allocation method has been held discriminatory by two federal court decisions, it is believed also that the commission will promulgate such an order immediately, and that it probably will call for an increased total quota to provide room for the increases to meet court requirements.

At the same time, it was believed generally that if the total allowable for East Texas is increased, as expected, that the commission might resort to additional production shutdown days each month to prevent Texas' yield from becoming too high. It was freely admitted that the market could not absorb an additional 100,000 to 200,000 barrels daily from the field without suffering a price reduction. If the commission should follow such a course, it is likely that all wells in Texas will be permitted to produce but 20 days monthly, in contrast with 25 producing days in preceding months. This action would permit the commissioners to give East Texas the increased allowable demanded by firms having wider spacing that the average, and still would keep the state's total output within the bounds of the Bureau of Mines' estimate of demand. Of course, this would probably draw criticism from concerns not operating in East Texas.

The contentions of Humble Oil & Refining Company at the hearing were similar to those presented in federal court, and which formed the basis for an injunction permitting the company to produce about 44 percent more oil than is assigned to Humble leases by railroad commission allowables.

Humble presented data intended to

(*Continued on page 62*)

crudes in storage than the choice grades.

Drawing from Storage

Last week about 300,000 barrels of oil were being pulled daily from storage tanks by major companies in North, West Central, and West Texas and the Texas Panhandle. Withdrawals in June and July had averaged only about 25,000 barrels daily. Total stocks at the end of June in those districts amounted to about 19,000,000 barrels. But some of that was held by independent refiners and producers, while some of it was old and badly weathered. It was quite evident that the major companies could draw on stocks in the mentioned districts at the current rate for about 60 days.

Crude stocks that have remained undisturbed for a decade or longer are being utilized to alleviate the shortage faced by some of the refining interests in consequence of the production curtailment.

Considerable oil that is en route to the charging stills was accumulated during the early stages of development of the flush fields in the above named districts and antedates proration. The weathered grades require extreme pumping pressure on the main line systems.

Statistics partially reflect shut-downs

The latest available statistics of the industry, consisting largely of American Petroleum Institute figures, only partially reflected the exceptional conditions caused by the 15-day shut-downs in the Mid-Continent.

A sharp drop in production was reported for the week ended August 19, during part of which the shut-downs were in effect. But for the same week an increase in refinery runs to a new all-time peak was reported, and gasoline production also was reported higher, while a withdrawal of only a little over a million barrels from gasoline storage was shown.

It is to be expected that figures for the week ended August 26 will more appreciably reflect the oil field shutdowns and the resultant slowing down of refinery runs, due to temporary scarcity of raw material.

United States production was reported by the API at 2,480,550 barrels daily for the week of August 19, down over a million barrels from the week before.

Crude runs to stills were reported at 3,575,000 barrels daily, up 115,000 barrels from the previous week's average and at a new all-time peak, which was 9.5 percent higher than the level for the corresponding week last year.

Gasoline production was increased more than 25,000 barrels to a daily average of 1,669,285 barrels, the week's output having been reported at 11,685,000 barrels.

Stocks of finished and unfinished gasoline were reduced 1,121,000 barrels, having declined to 74,738,000 barrels. The gasoline inventory then was 2.8 percent larger than one year previously.

Stocks of gas oil and distillate fuels (heating oils) were increased about 750,000 barrels to 37,013,000 barrels in the week ended August 19. They were then 4.1 percent larger than one year before.

The inventories of residual fuel oils (industrial fuels) also were increased about 750,000 barrels to 115,069,000 barrels. Those stocks are 6 percent smaller than at this time last year.

Crude oil storage came down 1,446,000 barrels in the week ended August 12, latest period for which Bureau of Mines figures are available, and stood then at 267,536,000 barrels, a new low since April, 1923. The crude inventory at the new level was 6.5 percent smaller than one year previously.

Some Grades Scarce

Major companies of the Southwest, with few exceptions, will be in need of certain grades of crudes at the end of the 15-day shutdowns, although they could go a greater period if necessary by doing a lot of switching and substituting. Much of the crude oil on hand was second and third choice material from a refining standpoint.

Moreover, when the Texas Railroad Commission readjusts allowables over the state under its September order, while holding the state total down strictly, as foreshadowed by hints that the East Texas field would be given an increased allowable, some of the major purchasers may be obliged actively to seek certain grades of crude affected by such revised allowables.

New England Gasoline Up

In reflection of improvement of the gasoline market, Socony-Vacuum Oil Company effective August 24 advanced its tank car price for all grades of gasoline 3/10-cent a gallon throughout New York and New England. Tank wagon and retail prices also were advanced by the company at the same time in some areas where postings had been sub-normal.

Socony-Vacuum, in announcing the increases, stated that they were made in view of increased cost due to recent improvements in products and also in reflection of the increase in prices quoted for 68 octane gasoline on the Gulf Coast.

Refinery Prices Up Sharply

In consequence of the exceptional demand for the various refined products caused by the oil field closings in the Mid-Continent, the tank car prices of gasoline, kerosene, and lighter fuel oils as well as natural gasoline have increased materially.

Published quotations on refined gasoline have been advanced as much as ½-cent a gallon on some grades and in some districts, although some such increases have been only ⅛- or ¼-cent. Moreover, even larger advances than those published have been reported.

Natural gasoline has been particularly scarce under the shutdowns, and the tank car price in the Mid-Continent has been advanced generally a full cent, from 3 to 4 cents a gallon.

Kerosene and the lighter fuel oils have been increased meanwhile in the Chicago market as well as at Mid-Continent refineries, the advances having been in many cases ⅛- or ¼-cent a gallon and in some instances ⅜-cent.

U. S. motor gasoline at Oklahoma refineries ranged last week about as

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1937						
August 28	[5]3,731,450	3,425,000	309,506,000	66,997,000	112,111,000	
September 25	3,666,300	[5]3,455,000	307,974,000	65,620,000	116,472,000	
1938						
March 19	3,433,550	3,080,000	306,380,000	[1]93,192,000	122,067,000	
July 30	3,316,400	3,240,000	288,514,000	76,864,000	27,573,000	116,721,000
August 27	3,388,500	3,255,000	285,029,000	71,754,000	29,747,000	117,179,000
September 24	3,251,150	3,220,000	280,278,000	68,605,000	31,183,000	119,285,000
October 29	3,237,500	3,145,000	275,824,000	67,590,000	33,690,000	120,029,000
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
November 26	3,260,900	3,295,000	270,563,000	68,628,000	33,749,000	119,885,000
December 10	3,245,100	3,150,000	[6]269,509,000	68,587,000	32,068,000	118,711,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	29,082,000	115,741,000
1939						
January 28	3,248,250	3,235,000	271,763,000	77,279,000	26,583,000	112,766,000
February 25	3,328,850	3,185,000	271,758,000	84,597,000	23,419,000	110,252,000
March 25	3,382,350	3,225,000	273,915,000	87,561,000	21,487,000	107,551,000
April 22	3,526,700	3,280,000	277,156,000	[8]87,769,000	21,058,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
May 20	3,438,400	3,460,000	277,068,000	84,294,000	26,389,000	109,405,000
May 27	[2]3,585,250	3,405,000	278,289,000	84,152,000	26,992,000	109,386,000
June 10	3,376,950	3,510,000	274,692,000	82,716,000	29,357,000	111,239,000
June 24	3,452,800	3,430,000	272,297,000	81,733,000	30,239,000	111,726,000
July 1	3,463,000	3,480,000	271,567,000	81,102,000	31,230,000	113,388,000
July 8	3,529,800	3,420,000	269,348,000	80,823,000	32,435,000	113,494,000
July 15	3,529,700	3,390,000	268,199,000	79,416,000	33,673,000	114,075,000
July 22	3,583,750	3,395,000	268,447,000	77,960,000	34,366,000	114,035,000
July 29	3,539,100	3,460,000	268,513,000	77,887,000	34,900,000	114,053,000
August 5, 1939	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 12, 1939	3,550,100	3,460,000	[3]267,536,000	75,859,000	36,239,000	114,309,000
August 19, 1939	[6]2,480,550	[1]3,575,000	.....	74,738,000	37,013,000	115,069,000
August 20, 1938	3,392,700	3,265,000	[4]286,251,000	72,709,000	[8]	[9]
Change in past year	—26.9%	+9.5%	—6.5%	+2.8%	+4.1%	—6.0%

[1] All time peak. [2] Peak for 1939. [3] Lowest for 16½ years. [4] Stocks, August 13, 1938.
[5] Peak prior to 1939. [6] Lowest for year.
[7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California.
[8] Available data for year ago include only stocks at refineries, and not at terminals, in transit, etc., except in California. Those stocks on August 19, 1938 totaled 27,981,000 barrels, and comparable stocks on August 19, 1939, totaled 29,475,000 barrels, or 4.1% more.
[9] Available data for year ago include only stocks at refineries, and not at terminals, in transit, etc., except in California. Those stocks on August 19, 1938, totaled 117,620,000 barrels, and comparable stocks on August 19, 1939, totaled 110,550,000 barrels, or 6.0% less.

follows: 62 octane and below, 4⅜ to 4⅝ cents a gallon; 63 to 66 octane, 4⅝ to 5⅛ cents; 67 to 69 octane, 4⅞ to 5¼ cents; 70 to 72 octane, 5 to 5½ cents.

Corresponding prices in the Chicago market were: 4¼ to 4⅝ cents, 4½ to 5 cents, 4¾ to 5 cents, and 5 to 5⅜ cents.

In East Texas limited quantities of 60-62, 400 end point gasoline were offered around 4½ cents a gallon, as compared with the generally prevailing price of 4¼ cents prior to the Mid-Continent shutdowns.

Following four ¼-cent advances within a week, natural gasoline, grade 26-70, was selling in the Mid-Continent markets, f.o.b. refineries at 4 cents a gallon, and sales were reported at 3¾ to 4 cents, f.o.b. Breckenridge, Texas.

Kerosene Prices

Kerosene prices f.o.b. Oklahoma refineries ranged from 3⅜ to 4¼ cents a gallon for the 41-43 water white grade, and from 3½ to 4⅝ cents for the 42-44 water white grade; and corresponding prices in the Chicago market were 3⅜ to 4 cents and 3½ to 4¼ cents.

In the Chicago market range oil was priced from 3⅜ to 3⅞ cents a gallon. The No. 1 white oil was priced from 3¼ to 3¾ cents, and No. 1 straw from 3 to 3¼ cents. No. 2 straw was 3⅛ to 3¼ cents. No. 3 oil was 2¾ to 3⅛ cents. No. 5 oils were 65 cents a barrel. The No. 6 oil was quoted at 35 to 45 cents.

Crude Production

Illinois and California only big producers not stopped as output drops to record low figure

UNITED STATES production of crude oil during the week ended August 26 was at an average rate of 1,422,850 barrels daily. At this level it is the lowest since January, 1922, and off 2,487,000 barrels from the all-time high established three weeks ago. Output of the preceding week was cut 851,450 barrels daily as continued enforcement of Mid-Continent shutdown orders brought Texas production down to 12 percent of normal, cut Oklahoma and Kansas output off entirely, and left California and Illinois as the major contributors. Output was 2,099,050 barrels under Bureau of Mines estimate of demand for domestic crude during August.

Texas produced 168,250 barrels daily; off 221,250 barrels from the week before as water exemptions constituted the only allowable production.

California was the biggest producer of the week with 612,700 barrels daily; off 14,700 barrels from the previous week but 14,400 and 17,600 barrels over proration limit and bureau estimate, respectively.

Oklahoma simply did not produce any oil as the shutdown order stood firm against court attacks and applications for exemptions.

Louisiana, allowing some production to the stripper wells, yielded 54,200 barrels daily, or 175,300 barrels less than the preceding week.

Illinois production, held in temporary check to clear pipe line situation prior to the use of new lines, averaged 308,750 barrels daily; off 2850 barrels from the week before but 106,850 barrels over federal recommendation.

Kansas, like Oklahoma, completely curtailed production.

Arkansas, smallest producer of the striking states, cut last week's production 40,350 barrels to 29,800 barrels daily. Michigan's order reducing allowable 18,000 barrels brought production to an average level of 60,250 barrels daily; off 10,750 barrels from the preceding week.

United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

Note: The figures indicated below do not include any estimate of oil surreptitiously produced.

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (August)	State Allowable in Aug.	BARRELS DAILY FOR WEEK ENDED Aug. 26	Aug. 19
TEXAS—				
Texas Panhandle	.....	.....	7,300	19,800
North Texas	.....	.....	14,500	45,250
West Central Texas	.....	.....	4,450	9,500
West Texas	.....	.....	18,000	64,700
East Central Texas	.....	.....	4,050	50,450
East Texas Field	.....	.....	10,500	80,950
South Texas	.....	.....	27,200	60,300
Texas Gulf Coast	.....	.....	82,250	58,650
Total Texas	1,428,100	1,393,225*	168,250	389,500
CALIFORNIA—				
Long Beach	.....	.....	46,200	45,700
Santa Fe Springs	.....	.....	27,100	27,700
Huntington Beach	.....	.....	25,600	26,600
Dominguez	.....	.....	18,800	17,100
Ventura Avenue	.....	.....	34,500	35,500
Midway-Sunset	.....	.....	52,700	55,500
Kettleman Hills	.....	.....	54,000	52,300
Wilmington	.....	.....	85,700	86,100
Others	.....	.....	268,100	280,900
Total California	595,100	598,300†	612,700	627,400
OKLAHOMA—				
Oklahoma City	.....	.....	.....	52,555
Seminole Area	.....	.....	.....	69,970
Fitts	.....	.....	.....	12,000
Others	.....	.....	.....	110,475
Total Oklahoma	448,100	428,000	.....	245,000
LOUISIANA—				
North Louisiana	.....	.....	28,350	58,500
South Louisiana	.....	.....	25,850	171,000
Total Louisiana	259,300	241,602	54,200	229,500

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (August)	State Allowable in Aug.	BARRELS DAILY FOR WEEK ENDED Aug. 26	Aug. 19
ILLINOIS—				
New Pools	.....	.....	301,050	303,650
Old Pools	.....	.....	7,700	7,950
Total Illinois	201,900	.....	308,750	311,600
KANSAS—				
Burrton-Haven	.....	.....	.....	5,600
Russell County	.....	.....	.....	15,125
Silica	.....	.....	.....	6,100
Others	.....	.....	.....	71,475
Total Kansas	168,700	164,000	.....	98,000
NEW MEXICO	111,000	111,000	1,550	65,250
EASTERN STATES—				
Pennsylvania Grade	.....	.....	74,250	72,350
Others, Eastern	.....	.....	22,200	21,050
Total Eastern States	.....	.....	96,450	93,400
MOUNTAIN STATES—				
Wyoming	77,100	.....	69,950	63,250
Montana	16,400	.....	17,000	16,450
Colorado	3,900	.....	3,950	3,800
Total Mountain States	97,400	.....	90,900	83,500
MICHIGAN	54,200	.....	60,250	71,000
ARKANSAS	51,900	64,991	29,800	66,150
Total United States	3,521,900	.....	1,422,850	2,274,300

* Daily average under normal conditions, considering Saturday-Sunday shutdowns, water exemptions and exemption at Rodessa.
† Recommendation of Central Committee of California Oil Producers Association.

Specifications OF A CHAMPION

DOUGLAS SUPER MAINLINER

42 passengers. Wing span, 138'3". Overall length, 97'7". Overall height, 24'6½". Gross weight, 66,500 lbs. Fuel supply, 3050 gallons (enough to take automobile 1⅓ times around world). Maximum speed, 237 m.p.h. Cruising speed (using 74% of power), 210 m.p.h. Power: 4 Pratt & Whitney "Hornets," each developing 1500 H.P. at take-off.

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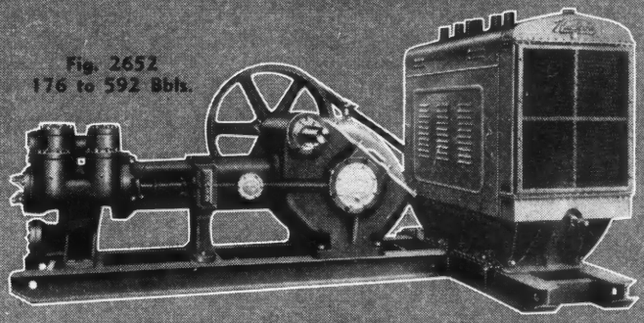

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Louisiana Probe

Suicide of government's star witness causes change in plans of prosecutors . . . Grand jury taking rest

When Dr. J. A. Shaw, head of the minerals division of Louisiana's Conservation Department, killed himself August 20 at his New Orleans home, he caused a sudden shift in the plans of John Rogge, special prosecutor sent to Louisiana by the Department of Justice to conduct investigations of conditions including alleged hot oil act violations.

Dr. Shaw was the main witness in the government's case against Freeman W. Burford in Dallas last week, and Rogge had planned to use him in several other cases including that of Richard W. Leche, former governor.

Federal District Attorney Rene A. Viosca, who would normally have conducted the case but was succeeded by Rogge, said in the presence of several newspaper reporters that Shaw's suicide would have been prevented had Rogge allowed the federal grand jury to return indictments on August 18, while the Burford trial was still in progress in Dallas. Rogge left for Washington to confer with his superior, Frank Murphy, and has not returned, although he announced he would be in New Orleans last Thursday.

The indictments due are understood to have included several alleged charges of violations of the Connally Act. When the grand jury was allowed to report after Rogge's return from Dallas no oil violations were in the allegations.

Rogge has indicated he will continue his investigations as soon as the grand jury returns from a two weeks vacation.

Inasmuch as Dr. Shaw's statement in Dallas that he "signed anything that I was told to sign, as long as it wouldn't hang me" was subject to cross examination by Burford's attorneys, the testimony can be used against Burford again should he be arrested again by federal agents. Burford was released from custody following a hearing before Federal Judge Whitfield Davidson of Dallas.

Another Louisiana official is indicted

E. S. Clements, Louisiana Conservation Commissioner, announced last week that Cyril K. Moresi, state geologist of Louisiana, had been placed in temporary charge of the Monroe office of the minerals division of the conservation commission, following resignation of W. D. Dark, manager, who was indicted during the week by the Ouachita Parish grand jury on charges of receiving bribes for giving permits to acidize wells. L. J. Melton, a field agent working under the Monroe office, indicted on similar charges, also resigned.

Anti-Trust Activities

Second Madison trial put off indefinitely . . . West Coast defendants protest showing voluminous records

Second Madison trust trial postponed

Federal Judge Walter C. Lindley last week indefinitely postponed trial of 8 major oil companies and 7 oil company officials on the "second" Madison indictment for alleged violation of the Sherman Anti-Trust Act. The trial had been set to open in the Wisconsin court on October 2, and the postponement was made "by agreement of all parties," it was explained. It will be reset later.

The charges involve alleged conspiracy to restrict jobber margins by use of uniform contracts. Another 26 defendants covered in the same indictment entered pleas of nolo contendere after the close of the first Madison trial and were fined a total of $400,000.

Companies still to be tried are Deep Rock Oil Corporation, Gulf Refining Company, National Refining Company, The Texas Company, Tide Water Associated Oil Company, and Globe Oil & Refining Companies of Illinois, Kansas and Oklahoma. Individuals are I. A. O'Shaughnessy, Minneapolis, Globe president; William V. Hartman, Pittsburgh, Gulf vice president; W. S. S. Rodgers, New York, Texas president; H. W. Dodge, New York, Texas vice president; S. B. Wright, Chicago, Texas territorial manager; J. W. Warner, Tulsa; and Edward L. Shea, New York, Tide Water president.

Pacific Coast probe declared unreasonable

"It would be physically impossible for the grand jury to look at the records wanted if it was in session for the next 10 years" is what Oscar Lawler, veteran lawyer, told U. S. District Judge Paul J. McCormick last week when he ex-

coriated the government for its conduct toward Pacific Coast oil companies. Lawler was arguing in behalf of Standard Oil Company of California, which he represents and other major companies who are being investigated on charges of monopolistic practices in the Pacific Coast petroleum industry through asserted elimination of competition by agreement.

Lawler sought through law and logic to persuade the judge to vacate subpoenas calling for all the books, records, documents, and inter-office memoranda of all the oil companies and correspondence each had with a half a hundred others pertaining to the production, refining, distribution and sales of petroleum products on the coast during the last five years.

The attorney said it was impossible to comply with the request as records reflecting the information asked are contained only on invoices; that there are an estimated 2,925,000 such invoices for the period specified in the subpoena; that such invoices are not indexed by price or otherwise, and are kept in 68 locations on the Pacific Coast, and selection of the required records would require 12 work-years, done by one person, assuming a 40-hour work-week. Lawler asked Judge McCormick to quash the subpoena or modify it in such manner as to not work an undue hardship in its performance, because it was incomprehensible in its scope.

Late last week, special assistants to the attorney general, Joe Brill and Moe Huberman, were slated to argue that the subpoenas were reasonable and should be complied with by the companies.

The companies involved in the case besides Standard of California, include The Texas Company(California); Richfield Oil Corporation; Rio Grande Oil Company; Shell Oil Company, Inc.; General Petroleum Corporation (California); Tide Water Associated Oil Company; Union Oil Company; and Signal, Seaside and Gilmore oil companies.

The special grand jury has been in session three months conducting the probe.

Wyoming cites four majors for gasoline price-fixing

Four major oil companies have been ordered to appear before Ewing T. Kerr, Wyoming attorney general, on September 12 to show cause why their charters should not be forfeited for alleged violation of the state's unfair competition act through gasoline price manipulation.

Continental Oil Company, The Texas Company, Sinclair Refining Company, and Stanolind Oil & Gas Company were the concerns ordered to appear and defend themselves against accusations made last week by Governor Nels H. Smith that the companies "had entered into agreements and combinations to prevent competition and influence prices of gasoline in Wyoming."

Kerr stated that if it was his opinion after the hearing that the companies had been guilty of discrimination under the terms of the unfair competition act of 1931, he would start court proceedings to bring about cancellation of their permits to do business within the state.

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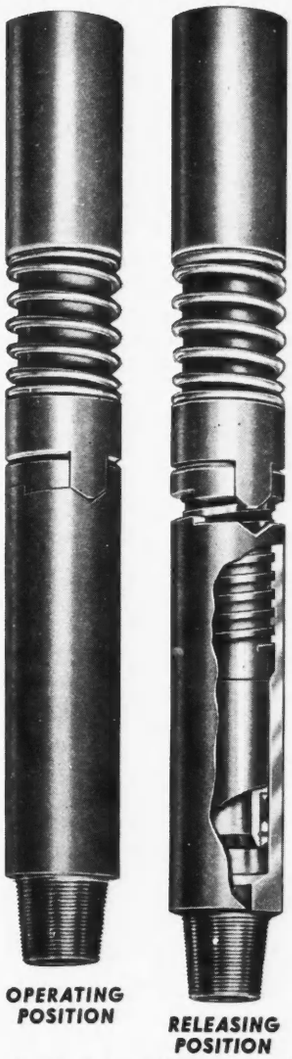

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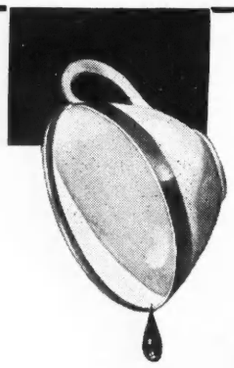

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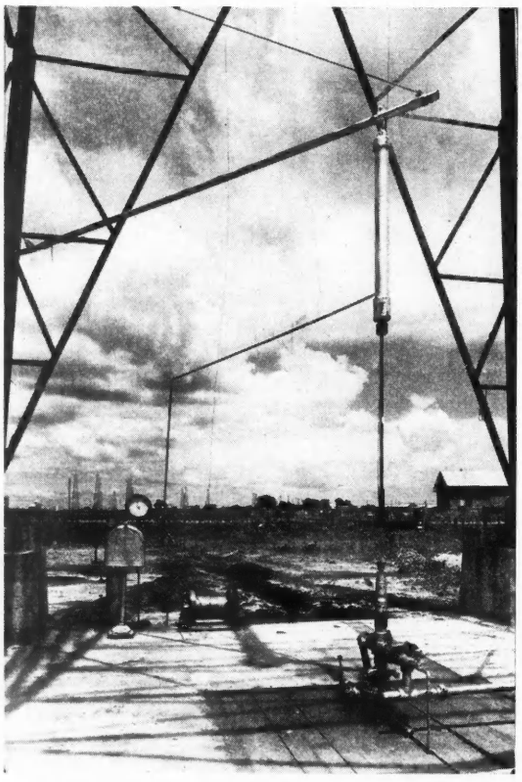

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WEEK'S DRILLING HIGHLIGHTS

Oklahoma

New shallow lime pay was found in Tulsa County, and a Pontotoc County wildcat indicates it will make a small well. Attempts to extend production of four pools ended in disappointment.

Kansas

Completion of wells in Kansas was retarded by the production holiday, but wildcats are still active with 13 new starts reported.

Illinois

Well in heart of Keensburg makes 80 barrels in 54 minutes to start a town-lot drilling boom. Edwards County test near Indiana strike has 15 feet of good saturation in Cypress. Fourteen wildcats started in 11 counties.

West Texas

Cedar Lake finally was established as an oil strike when the discovery came in flowing. Remoteness of this new Permian Basin field will retard its development for the present. Number of completions dropped due to the production holiday, but generally drilling work continues to the final stage before shutting down.

North Texas

A shallower lime zone was discovered in the Nocona field. A deep oil strike was made on the west side at Bryson. Bonita and Hull-Silk production was extended. This during a week when things were quiet because of the holiday.

Arkansas

Buckner field in Columbia County was extended a mile east. In the same county, a geophysical wildcat prospect has set casing for a test of indications in Smackover lime. Five wells were completed in the Magnolia field.

Texas Gulf Coast

A new field was indicated in the Chocolate Bayou area of Brazoria County by an ungauged flow of 45-gravity oil coming from the Frio. Another Frio strike is in prospect in Wharton County. League City production was extended. The second test at Martha in Liberty County has the sand higher than in the discovery. At Esperson a flank test reports flowing 25 barrels per hour.

Southwest Texas

Jim Wells County is on the verge of having the seventh new field of the year added, while in the same county a third producing level was found in an established field. Extensions were indicated for East Plymouth, San Patricio County, and West Ranch in Jackson County.

California

Kern County has a new oil field, opened with a well making 1000 barrels of 50-gravity oil. Deeper production possibilities were indicated by a test at Fruitvale. Last week's extension of the East Coalinga Eocene pool is being worked to reduce the volume of gas coming with the oil flow.

New Mexico

An outpost to the west of production at Lovington shows interesting possibilities, but one on the southeast found water under a thin strip of pay sand. New starts and drilling work continue at near normal levels during the production holiday in which the few exceptions to shut-in are to be charged back with the oil they produce, against future allowables.

Michigan

A wildcat in Ottawa County is running tubing to acidize and results will determine opening of a new play for Southwest Michigan. The Walker field in Kent County was extended into Ottawa County by two wells that are a half mile apart. In the meantime, Kent County continues the most active in the state.

Comparison of Permits Granted for New Wells

STATE	Week Ending Aug. 26	Total this Mo.	Total this Year	Total this Date Last Year	1938 Year Total
Arkansas	1	14	155	165	247
California	21	101	678	808	1,146
Louisiana	57	143	858	884	1,214
Kansas	35	104	1,005	1,042	1,453
Michigan	34	104	916	536	953
N. Mexico *	15	56	.....	.....	.....
Oklahoma	42	156	1,370	1,351	1,978
Texas	158	698	6,937	8,833	12,369
Total	353	1,376	11,965	13,619	19,360

*Data for New Mexico prior to August not available.

Summary of Wells Completed in the United States Week Ending August 26, 1939

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1939	Total this Date 1938
Alabama	....	....	....	....	.....	....	2
Arizona	....	....	....	....	.....	.....	.....
Arkansas	8	7	....	1	3,323	159	151
California	18	18	....	....	17,527	693	837
Colorado	....	....	....	....	.....	15	5
Florida	....	....	....	....	.....	.....	.....
Georgia	....	....	....	....	.....	1	1
Illinois	83†*	73†*	....	10	30,181	2,474†*	890
Indiana	....	....	....	....	.....	112	79
Kansas	34†	23†	1	10	188,262	906†	1,129
Kentucky	17	8	1	8	665	426	499
Louisiana	18	14	....	4	5,235	681	724
Michigan	26	15	....	11	3,230	935	571
Mississippi	....	....	....	....	.....	7	11
Montana	....	....	....	....	.....	92	44
Nebraska	....	....	....	....	.....	1	1
New Mexico	15	12	....	3	2,242	411	353
New York	16*	16*	....	....	73	373*	484*
North Dakota	....	....	....	....	.....	.....	.....
Ohio	14	7	7	....	201	594	622
Oklahoma	38†	21†	3	14	3,089	1,370†	1,449
Pennsylvania	38*	36*	1	1	49	1,030*	1,524*
South Dakota	....	....	....	....	.....	.....	.....
Tennessee	....	....	....	....	.....	.....	2
Texas	142	91	2	49	77,151	6,471	8,604
Utah	....	....	....	....	.....	.....	2
West Virginia	10	1	7	2	25	343	457
Wyoming	6	3	1	2	3,889	91	74
Total this week	483	345	23	115	335,142	17,173	18,414
Total last week	542	380	45	117	276,212	....	.....
Total this year	17,173	11,721	1,211	4,241	12,730,310	....	.....

† Includes salt water disposal wells. * Includes water input wells.

Oklahoma Fields

New shallow lime production discovered in Tulsa County.

Pontotoc County wildcat apparently is a small strike.

Tulsa.—A new shallow lime pay was found in Tulsa County at William Eiting and Dan Tiffany's Sand Spring Home 1, SE NW SW 26-19-11e, west of production in the Red Fork district. Big lime was topped at 800 feet and drilled to 847 feet. After a nitro shot of 140 quarts, the well flowed 50 barrels in 4 hours. Operators immediately staked Sand Springs Home 2 in SW 26-19-11e. This test is midway between Riverland and Gilmort pools, areas producing from the Turkey Mountain sand at an average depth of 2500 feet. Tankage was erected at the producer, which showed varying quantities of water.

Grisso Royalty Company and Eason Oil Company apparently have a small wildcat strike 1½ miles west of the Beebe pool, Pontotoc County. The hole filled 1500 feet with oil while drilling in Hunton lime, topped at 2476 feet. Seven-inch casing was set at 2471 feet and drilling continuing to deeper horizons.

Wildcats enjoyed a hectic week as four pools were defined by extension tests. Seminole County accounted for three failures and Pottawatomie County one. Johnson & Edward's Johnson 1, NW SE NE 2-6n-5e, a mile north of Gray pool, entered dry Earlsboro sand at 2915-40 feet to be abandoned. South of East Earlsboro, Midwest Production Company et al's Born 1, SWc 36-9n-5e, plugged the hole at 4500 feet. In the west extension area of Little River pool, E. W. Jones' Milsey 1, NWc 22-7n-6e, found the Wilcox sand watery on a drill-stem test. The sand was logged at 4398 to 4406 feet. The initial extension for the area was completed in Atlantic Refining Company's Jimmy 1, SE NW NE 21-7n-6e, which pumped 768 barrels daily at 4417 feet in first Wilcox sand.

Three quarters of a mile west of Shawnee pool, Pottawatomie County, Henry G. Marshall's Rose 1, SW NE NE 6-10n-4e, was given up at 4473 feet in the base of Earlsboro sand after more than a week of testing. In early stages the test showed from 10 to 12 barrels of oil daily but went dead. Several shots in the formation failed to stimulate the flow. In the county two important wildcats were nearing the finish mark. Kirk-Green-Way Drilling Company et al's Boland 1, SE NE NW 28-11n-3e, 3 miles east of Dale, topped first Wilcox sand at 5853 feet and drilled to 5874 feet where circulation was lost. A core in second Wilcox sand from 5885 to 5905 feet showed soft watery sand. Yorkan Production Company's Bewley 1, NWc 26-11n-3e, had the top of Viola lime at 5600 feet, topped Simpson dolomite at 5665 feet and were drilling below 5750 feet.

In Coyle pool, Payne County, The Texas Company staked a new location in J. S. Graham 2, C E½ SE SE 11-17n-1e, a south offset to J. S. Graham 1 and on the west line of production. Operators Longan 3, C W½ NE NW 12-17n-1e, landed 150 feet of 10-inch surface pipe and were drilling below 2400 feet. Furtherest east producer, Magnolia Petroleum Company's Cain 4, C E½ NE SW 12-17n-1e, after acid treatment flowed 250 barrels in 12 hours and shut in pending the shutdown order. In the south extension area, Helmerich & Payne's Collins 2, C W½ NW NW 13-17n-1e, ran an oil string in Viola lime and shut down operations prior to drilling in the pay, first Wilcox sand.

Kiowa County was again in the play with an impetus by Magnolia Petroleum Company blocking up considerable acreage in the county, including sections 28, 29, 32, 33, 34 and 35-7n-17w and 2, 3, 4 and 5-6n-17w. No locations have been staked.

A wildcat disappointment was registered in Alfalfa County in Kerr-Lynn Oil Company et al's Belter 1, C SE 32-28-10w, three miles south of Bryon in the Cherokee-Bryon area, had hole bottomed in dry second Wilcox at 5790 feet. An electric survey disclosed a show of oil in Oswego lime with a gas show further up the hole. The test may be deepened to Arbuckle lime.

J. E. Crosbie et al's Robbins 1, SWc NW 6-22n-2w, off the Billings-Garber trend, Noble County, was above Layton sand at 3650 feet. In Canadian County, W. R. Ramsey et al's Calumet 1, C NW NE 16-14-19w, seismographically located on the prominent Calumet structure, cemented surface pipe at 540 feet and drilling was underway on the 9000-foot contract awarded Johnson-Kemmitz Drilling Company.

South of Ramsey pool, Murray-Griffey et al's Davis 1, SEc 24-18n-1e, being shutdown for fuel for several days, resumed operations at 2800 feet.

Sinclair Prairie Oil Company's Ward 1, SEc 30-7n-1e, Cleveland County wildcat was below 6125 feet in Woodford shale.

Oklahoma Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Atoka—		
Gratz, Sparks 1, ne sw se 33-1n-14e	*	518
Caddo—		
Magnolia, Henley 3, nwc se 35-6n-10w	*	3598
Creek—		
Carolyn, Walker 6, sw ne sw 21-18n-9e	Abnd.	Lcn.
Pepis, Land 1-A, ne sw se 7-18n-12e	7	1702
Garfield—		
Gulf, Hendrie 1, c w½ sw sw 21-24n-4w	*	6326
Jackson—		
Gulf, Boucher 8, sec sw 32-1n-19w	60	2618
Burnham, Gaines-Hensley 2, se sw nw 10-1n-20w (otd 14218)	240	1529
Vaughn, Garrett 1, swc 12-1n-20w	*	1540
Ray, Nadine 1, nwc 5-1s-19w	55	2585
Burnham, Sumner 4, ne nw se 6-1s-19w (otd 2578 ft)	82	2580
Burnham, Thelma 2, nw se se 6-1s-19w	295	2409
Logan—		
Cooper, Miller 1, nwc se 4-17n-4w	*	5044
Muskogee—		
Chain, Charles 1-A, se se ne se 27-15n-15e	*	2139
Okfuskee—		
Carter, King 3, 130 ft e sec sw 2-11n-8e	54	3392
Okmulgee—		
Burke-Greis et al, Hawkins 1, ne nw ne 6-14n-11e	*	3110
Brady, Stiles 2, sw nwc sw 20-15n-12e (otd 1634 ft)	*	2765
Royal, Thomas 11, ne nec 29-15n-14e	1	1681
Osage—		
Midco, 2, sw sec sw 32-24n-8e	18	2348
Pawnee—		
Haynes, Tate 1, sec nw 9-20n-9e	*	2100
Johnson, Finley 8, ne ne nw ne 28-29n-9e	450	2085
Payne—		
Amerada et al, Fruin 3, c w½ se nw 12-17n-1e	164	4865
Olsen et al, Minnich 1, cwl nw se ne 3-18n-6e	*	3015
Pontotoc—		
Schafer, Shi 1, ne se se 24-5n-4e	*	2630
Minton et al, Powell 3, nw sw ne 35-5n-7e	325	2326
Pottawatomie—		
Curtis et al, Townsend 1, nw sw sw 28-6n-5e	*	4088
Clark, Brown 1, nw sw ne 15-7n-4e	45	4297
Portable, Boyd 2, nw ne se 29-7n-5e	260	4135
Mid-Continent, Vieux 5, ne nw se 31-7n-5e	130	4220
Watchorn, Vansellous 3-A, c n½ ne se 32-7n-5e	150	3127
Alma, Canfield 1-A, c w½ nw sw 33-7n-5e	30	3124
Yorkan, Carlock 1, sec ne 6-10n-4e		*4567
Dunnett, McDonald 1, cwl sw se se 31-11n-4e	472	4466
Seminole—		
Stanolind et al, Salina 1, se ne nw 4-5n-6e	21	3210
Sunray, Cully 1 "A", ne ne sw ne 18-5n-8e	180	3869
Thompson, Ferguson 1, nw ne sw 7-7n-8e	*	3957
Stephens—		
Carter, Spears 1-A, sw se sw nw 15-1s-5w	¶0.5	418
Tillman—		
I. T. I. O., Graham 5, ne se ne 1-3s-19w	50	3121
Tulsa—		
King et al, Bloodsoe 1, se nw se 36-17n-12e	¶0.2	670
Wagoner—		
Sewell et al, Swindrith 1, nw ne se 30-17n-18e	¶0.07	1134

*Failures; †Junked; ¶Million cu. ft. gas.

More dry holes in Missouri campaign

St. Joseph. Mo.—Forest City basin explorers went through August with a few more dry holes, a few new tests and not much more big company support. But numerous good oil showings bolstered their confidence and the wildcatting continued as hard as ever.

Immediately east of St. Joseph a test has reached the derrick stage; two are going down 12 miles north; one 40 miles north; one 60 miles northeast; one 30 miles east; one 20 miles southeast and four holes have been drilled 40 miles southeast. A few scattered tests range to east and northeast Missouri.

Nearby Iowa territory has a wildcat test under way and Kansas Forest City basin territory has yielded one dry hole within 20 miles of St. Joseph and a gas well in Johnson County, on the southwest flank of the basin.

Tests about to start are as follows:

Buchanan County—F. C. Miller, Corrough 1, c se se 24-57-35; location established through core drilling.

Clinton County—C. E. King, Vandercan 1, ne sw 18-55-31. Dry hole drilled by same operator in ne se se 13-55-32, same county.

Harrison County—McGinnis, Jergens, Elwell et al, Maple 1, nw se 3-62-26. Elwell has another location in nw se 7-63-27, same county.

Clay County—Ben Hall, 10-53-32.

Jackson County, Kansas—Francis O. Haun et al, Wischmeier 1, nw sw 6-8-16.

Commercial production of gas was made possible in the southwest flank of the basin when the B. F. Hammel et al's Bross 1, NW SW SE 4-12-24, in

Johnson County, Kansas, produced 500,000 cubic feet daily, having sand at 497-520 feet. This is six miles southeast of Kansas City and four miles northeast of the Monticello gas field.

To the northeast of Kansas City and 40 to 50 miles southeast of St. Joseph, showings have been encountered at the same shallow depths, leading some operators to believe that shallow production will be possible some place in the basin. Ben Hall found a gas showing in Clay County, Section 35-52-32, at about 600 feet, but acidization failed to produce oil. In the Loomis-Jordan-Wells' Macey 1, NE SW NW 10-53-27, Ray County, some 32-gravity oil was found about 600 feet, but operators abandoned the test.

Still nearer Kansas City, in SE SW NE 22-49-32, Jackson County, Hulse & Christopher's Wiston 1, was shot after finding saturation in the Wayside sand between 470 and 495 feet. There was 220 feet of free oil in the hole, but it did not clean itself.

Twelve miles north of St. Joseph in Andrew County Jones-Hyde's Holt 1 has drilled below 1800 feet. Oil showings were reported at 1412 feet and at 1497 feet. This test is in SE NW NE 34-60-35. Nearby in NW NW SE 28-60-35, Andrew County, Davis Brothers' Gee 1 is below 1575 feet.

Seventy-one feet of oil showing was found in an Adair County test in northeast Missouri. In NW 20-63-13, the test has drilled below 1100 feet. The showing was between 1002 and 1073 feet, in the Cooper limestone. Operators pushed on to the St. Peter's sand, hoping for easier production.

From a geological standpoint, one of the most interesting tests at the moment is Brin and Nathan's Decker 1, C NW NW 1-61-38, Holt County. It was located through magnetometer readings.

Kansas Field Developments

Completion operations delayed by production shut-in. Thirteen wildcat operations are added to active list.

Wichita.—Activity in Kansas was slowed considerably as testing operations were suspended and completions awaiting end of the 15-day shut-down order. An impetus was given wildcatting with 13 starts reported.

A wildcat in Kiowa County, Sinclair Prairie Oil Company's Price 1, NWc SW 22-28-20w, 1 mile west of Mullinville, perforated with 48 shots in Mississippi lime at 4920-4927½ feet and acidized with 2000 gallons. On swabbing test it made a gallon or two of oil, water and some gas in one hour. Gas volume increased to 100,000 cubic feet and operators are swabbing in an effort to exhaust the water.

One and one half miles west of Heiken pool and north of Stumps pool, Ellsworth County, Central Petroleum Company and Duwe & Farris' Schepmann 1, C SL SW NW 27-17-10w, topped Kansas City-Lansing structurally high at 2986 feet, without a show however, and should rotate to Arbuckle lime in approximately 150 feet. If the lime follows a structurally symmetrical position as upper formations, a well is indicated.

Herndon Drilling Company's Gray 1, SWc NE 30-18-7w, northeast of Geneseo pool, Rice County, had a show of oil in Arbuckle lime at 3194-3197 feet. Seven-inch casing will be run prior to drilling plugs. Northeast of Silica pool, Central Petroleum Company's Dippel 1, CNL NE SE 27-19-10w, withheld acidizing operations during the closed production period. Kansas City-Lansing lime will be tested and a small producer is expected provided water can be shut off. The well initially headed several oil flows into the pits.

East of Silica pool, Rice County, Phoenix Drilling Company's Linville 1, SWc SE 4-20-10w, encountered dry Arbuckle lime at 3388 feet and was drilling below 3430 feet. At 3400 feet the hole filled with water and operators may plug back to Lansing lime where a show of oil was found.

Continental Oil Company was drilling at Hauschild 1, NEc SW 14-21-7w, a half mile south and a third mile east of production in Wherry pool, Rice County.

The initial test in the Northeast Kansas area of Forest City Basin was a failure in Arbuckle lime at 2790 feet, only water and sulphur being brought in. Earl Wakefield et al's National Life Insurance 1, C NW NE 17-6s-20e, north of Panell, Atchison County, was started the last of June. Hunton lime also showed water in the test. Four miles west of Lone Star, Three Star Oil Company's Griffith 1, C NW SE 4-14-18e, was testing below Mississippi lime at 1850 feet. This test is also in Northeastern Kansas, Douglas County.

Two Arbuckle lime failures were recorded in Barton County. Crown Petroleum Company's Marchand 1, NE SE NW 13-20-12w, was abandoned at 3384 feet in the lime. No shows were encountered at Triangle Drilling Company's Breford 1, CSL SE SW 25-16-11w, which topped Arbuckle lime at 3414 feet and drilled to a total depth of 3447 feet.

Barton County had four wildcats started during the week. Joe Aylward et al's Wendtland 1, C EL NE NE 4-17-11w, is ¾ mi'e northeast of Kraft pool. North of the pool, Kingman Oil Company was drilling Harzman 1, C W½ NW SW 33-16-11w. C. E. Ash and Crown Petroleum Company have rig up at Ernsting 1, CWL NE SE 1-20-12w, between Wolf and Ellinwood west pools. A mile east of Prusa West pool, Solar Oil Company was rigging Schartz 1, SEc NW 18-19-11w. The test lies between the Prusa pool proper and Prusa West pool. Simpson Oil Company and Atlantic Refining Company were drilling after cementing surface pipe in Brown 1, CWL NW SE 31-20-12w, 6 miles northeast of production in Gates pool.

Location has been staked by Republic Natural Gas Company for Moran 1, C NW SE 24-15-20w, 8 miles west of Ruder pool, Ellis County. In the same county, Margay Oil Corporation and Lario Oil & Gas Company completed rigging Bemis 1, C S½ NW NE 23-11-17w, ½ mile southwest of the Bemis pool.

In Butler County, Joe Aylward, Simpson et al's Marsh 1, NWc SW 23-28-6e, north of Snowden-McSweeney district, were drilling below 1800 feet. A machine has been rigged up by Rex & Morris at McKaig 1, SW NW NE 24-28-6e, in the same area.

Cunningham oil and gas pool was seing further activity as Drillers Gas

Kansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Barton—		
Carey, Perdue 1, swc nw 21-16-11w (new potential)	1023	3351
Republic Natural, Pospishel 1, nec se 20-17-15w	231	3576
Skelly, Hickey 1, c sw 15-18-15w	*	3590
Butler—		
Rex et al, Nelson 2, nw ne ne 22-28-7e	*	3151
Hay, Table Mesa, et al, Ferrell 2, se nw sw se 21-28-8e	60	2765
Cowley—		
Aladdin, Starlin 1, nec sw 27-30-4e	*	3357
Blair et al, Waite 1, ne nw nw 28-31-4e	5856	3333
McKnab et al, Waite 3, nw ne ne 28-31-4e	6110	3308
Henderson, Clover 1, c ne se 8-31-7e	¶2.7	2223
Roth, Guthrie 3, nw ne ne 30-33-8e	*	2330
Ellis—		
Darby, Henderson 3, swc nw 7-11-17w (maximum 3500 bbls)	62,470	3369
Jorgenson 4, c s½ sw sw 7-11-17w (maximum 3500 bbls)	56,605	3336
Jorgenson 5, nwc sw 7-11-17w (maximum 3500 bbls)	26,135	3354
Gulf, Mai 6, ne se se 14-11-17w	3500	3372
Cities Service, Colahan 1, nwc 24-11-17w (maximum 3500 bbls)	14,065	3407
Ellsworth—		
Spencer et al, Gemeinhartd 3, cwl sw se se 31-17-10w	1636	3266
Geary—		
Scheu et al, Aye 1, nw sw nw 10-12-8e	*	2239
Greenwood—		
Blue Stem, Anderson 1, nw se se 5-28-11e	*	1228
Leavenworth—		
Hardaway et al, Scheller 1, sw se sw 30-10-22e	*	390
McPherson—		
Shell, Meyers "A" 3, nw ne ne 14-19-2w	29	2987
Nice—		
Continental, Wood 10, ne se se 12-18-8w	2255	3222
Vickers, Rodenberg 1, cwl nw ne ne 8-18-10w	*	3296
Cities Service, DeWitt 4, nw sw ne 33-19-9w	250	3227
Stanolind, Manke 3, c n½ ne se 28-19-10w	1968	3039
Russell—		
Witt, Speere 1, swc ne 7-14-14w	1311	3170
Phillips, Carrol 6, c e½ nw se 18-14-14w	61	3299
Stanolind, Sellens 1, c s½ sw ne 19-15-13w	Abnd.	Lcn.
Gulf, Sellens 1, nec nw 20-15-13w	75	3306
Southern, Sellens 15, ne nw sw 29-15-13w	161	3304
Neidens 6, ne nw ne 32-15-13w	48	3330
Cities Service, Podszus 3, sec sw 25-15-14w	1628	3301
Stafford—		
Virginia, Teipermann 1, nec sw 29-21-12w	*	3640
Moore, Stewart 2, c s½ se sw 12-24-11w	1631	3765
Continental et al, Russell 1, se nwc se 13-25-13w	1136	4131
Sumner—		
Palmer, Lawson 1, swc se 9-35-2e	*	3672

*Failures; †Junked; ¶Million cu. ft. gas.

Company started Gerber 1, CEL E½ E½ 35-27-11w, ¾ mile from nearest production in the Pratt County gas area.

Two miles northwest of Gates pool, Stafford County, Atlantic Refining Company was rigging Harter 1, NEc SW 9-21-13w. Western Kansas Oil & Refining Corporation and W-K Royalty Company staked location for Ferguson 1, NEc SE SW 21-30-8e, west of the Ferguson area, Cowley County.

Virgil pool of Greenwood County drew an extension test as Sharpless et al moved in rig for Edwards 1, NEc SW 32-24-12e. The wildcat is southwest of production.

Two locations west of production in Wilson Arbuckle dolomite pool of Cowley County, G. M. Smith, Pryor and Lockhart staked location for Moyer 1, in 8-33-6e. Same operators staked Kingsbury 2, SW SE 4-33-6e, also offsetting production in the area. East side of Hittle pool received a setback as W. M. McKnab, Winfield and Tulsa Oil Corporation abandoned Mary King 1, NW SW NW 22-31-4e, at 3480 feet in dry Arbuckle lime. It was an offset on the east to a 2500-barrel producer.

In the northeast extension area of Silica pool, Rice County, Skelly Oil Company's Ira 1, C S½ SW NW 27-19-10w, topped Lansing lime at 2957 feet to find pay at 3042-3044 feet. In 40 minutes, the well flowed 25 barrels of oil through casing, accompanied by an open-flow of 3,500,000 cubic feet of gas. This test offset a large Lansing lime producer.

West Virginia Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Braxton County—		
Pittsburgh & W. Va. Gas Co., Fear 7683	*	1707
Cabel County—		
United Fuel Gas Co., Adkins 4844	¶.12	3605
Clay County—		
Elk River Gas Co., Brown 1	¶.30	4366
Doddridge County—		
Pittsburgh & W. Va. Gas Co., Parks 6114	¶.18	1845
Gilmer County—		
Bowser Oil & Gas Co., Gainer 1	¶.10	2073
Kanawha County—		
Guy B. Ray, Given 1	¶.15	4000
Lincoln County—		
H. Waggoner, G. Lovejoy 1	25	1735
Woodall Gas Co., C. Haven 1	¶.75	3570
Roy & McComas, C. Adkins 1	¶	3376
Ritchie County—		
Hope Nat. Gas Co., B. Burke 5992	*	2065

Pennsylvania Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Bradford District—		
Quinlan Oil Co., Fee	10	....
John H. & Shirley D. Sloan, 413 Bingham	3	....
George Van Vechten & Son, Farr	3	....
Hardwick, Rice & Tuohy, Fisher	2	....
Esther Oil Co., Inc., Lawton	2	....
Kahle Oil Co., Norton	1	....
C. M. Lippert et al, Lippert	2	....
E. G. & F. W. Staphan, Kurtzhaltz	7	....
Forest Oil Corp., 3 wells	3	....
Forest Petroleum Corp., 2 wells	2	....
Niagara Oil Corp., 4 wells	4	....
Bradford Transit Co., 10 wells	10	....
Bradford: Water Intake Wells—		
Esther Oil Co., Inc., Lawton	..	....
Forest Oil Corp.	..	....
Forest Petroleum Corp., 2 wells	..	....
Niagara Oil Corp., 5 wells	..	....
Butler-Armstrong District—		
Nicholas A. Marshall et al, John Rittman	25	....
Middle District—		
I. Dana Kahle, J. M. Nickle	½	....
A. E. Kaber, D. E. Powers	¶	....
Bayliss & Bloss, Sutton	1	....
Lofgren, Atkin et al, Radtke	2	....
Middle District: Water Intake Wells—		
Cities Service Oil Co., Hamilton	..	....
New York-Pennsylvania: Gas Field—		
New Penn Dev. Co., E. J. Davis	*	....

*Failures; †Junked; ¶Million cu. ft. gas.

Illinois Developments

Quick townsite campaign follows strike at Keensburg.

Edwards County wildcat cores 15 feet of Cypress sand.

Mattoon, Ill.—A townsite boom in Keensburg resulted with completion last week of Harry Fotiades' French Elevator Lot 1, in the center of town, which on its initial test produced 80 barrels of oil from the Cypress sand in 54 minutes. Twenty-eight operations were in progress in the town at last report.

In the St. James pool of Fayette County, Gulf Refining Company's Smail 3, after a shutdown of several days following drilling a dry Weiler and dry Benoist, resumed drilling and topped the McClosky at 1917 feet. Ten feet of broken saturation was cored, and an electric test was being run to determine production possibilities. Its successful completion would give Fayette County its first lime production.

Pure Oil Company's Homer Coen 1, SE SE SE 36-5n-9e, a wildcat, was drilling on toward the McClosky after coring through the Cypress sand. Findings in the Cypress were kept tight.

One and one half miles northeast of the Griffin pool discovery well in Gibson County, Indiana, C. G. McFadden and Claude Bell's Charles Bump 1, SE SW 34-2s-14w, cored about 15 feet of Cypress-sand saturation described as good. Casing was being set. It is 2 miles northeast of Grayville, in Edwards County.

Four wildcat tests were completed during the week, all as failures. In Marion County, Beacon Oil & Gas Company's Vurcell 1, NE NW SW 31-2n-3e, Stevenson township, topped the McClosky lime at 2397 feet and was abandoned at 2415 feet, while Papoose Oil Company's J. S. Weems 1, NE NW SW 20-1n-4e, Romine Township, failed to gain saturation at any level and was plugged at 2974 feet. In Cumberland County, Carl Robinson's S. H. Brown 1, SW NE SE 1-9n-10e, Crooked Creek Township, topped the Devonian at 2247 feet and was plugged at 2381 feet. In Jefferson County, McQueen et al's Sorenson 1, NE NE NW 5-2s-2e, Shilo Township, topped the Benoist at 2085 feet and was abandoned at 2350 feet.

The week saw 14 new wildcat starts, scattered over 11 counties.

Illinois drilling more than double last year's record

Urbana, Ill.—In a report covering the first 7 months of 1939, the Illinois Geological Survey lists 1951 wells drilled as compared to 802 during the same period of 1938 and to 2541 during the entire 12 months of the past year. Well completions in 1937 numbered 449, and in 1936 they totaled only 92.

Producing wells drilled during the past 7 months numbered 1570 and compared to 618 during the same period of 1938 and to 2010 during all of the past year. Completed producers during 1937 totaled 292, and in 1936, before dis-

Illinois Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Clay County—		
Pure, Clay City Bank 5A	828	3120
Clay City Bank 7A	1745	3140
Raymond C. Hubbell 1A	170	3125
Wiser Oil Co., John Daly 4	1000	3131
Clinton County—		
Lynn et al, Western Catholic Union 1	*	1095
Cumberland County—		
Carl Robinson, S. H. Brown 1	*	2381
Fayette County—		
Gulf, Smail 1	236	1557
Carter Oil Co., H. Beck 1	264	1515
Ann Hopper 3	966	1588
C. Blankenship 1	732	1589
H. Zetszt 1	110	1591
Bauersmith 1	438	1594
J. B. Drees 6	156	1556
J. B. Drees 5	408	1571
H. Lilly 3	28	1588
J. Tipsword 3	882	1589
M. B. Heckert 5	672	1545
T. Mills 8	548	1545
P. Durbin 2	504	1557
S. Williams 3	264	1594
H. S. Williams 5	240	1535
L. Mills 4	260	1526
Wilbur Hawkins 2	72	1561
T. Mills 6	377	1540
Mary Williams 4	396	1525
Mary Williams 5	450	1590
Mary Williams 6	648	1571
Grace Durbin 1	340	1520
Orvil Summers 1	300	1545
Edith Quade 1	D	1274
Richard Larrimore 11-6	I	1592
Shulman Bros., Combe 6	70	1592
Combe 5	D	1388
Texas Co., A. H. Yakel 1	420	1565
A. H. Yakel 2	182	1562
A. H. Yakel 3	196	1571
Ohio Oil Co., Rush 4	219	1552
Gibson & Jennings, McDonald 1	150	1559
Stewart Dr. Co., Hoover 1	40	1580
Marion County—		
Texas Co., City of Centralia 22	259	1769
E. Farthing 4C	147	1880
C. E. Richardson 4B	245	1874
G. Pittinger 9	112	1813
C. E. Richardson 6A	210	1950
E. Tate 12	329	1951
N. Young 16	210	2037
N. Young 19	880	1873
O. Telford 3	2618	2050
A. McCollum 13	1337	1985
F. Miller 7	259	1780
W. C. McBride, Inc., Fyke 7	162	1854
Papoose Oil Co., Weems 1	*	2974
Roy, F. Shanafelt 1	74	2156
Walker et al, Martin 1	*	2145
Johnson, Cole 3	300	2085
Magnolia, C. D. Phillips 7	407	2100
D. A. Shanafelt 23	1435	2050
Potter Bros., M. & I. RR. 10A	150	2114
Shell, Salem State Bank 6A	254	2060
Salem State Bank 7A	800	1962
E. T. Farthing 7A	3834	2060
Shepherd, Flanagan 1	272	2122
Beacon O&G Co., Vurcell 1	*	2415
Perry County—		
W. R. Hayes et al, Collins 1	*	1275
Richland County—		
Pure, Montgomery 8B	230	3576
Kitchen & Wilson, R. E. Wilson 1	*	3094
Pure, Wakefield 12A	315	2613
Saint Clair County—		
Charles Osborn, D. Stein 1	200	555
Wabash County—		
W. N. Bartlett, Gray 1	168	2481
Howell et al, Shultz 1	208	2467
R. S. Hayes, Shultz 1	320	2881
Washington County—		
Amour et al, Newdeckor 1	*	1655
Magnolia, Kurwicki 4	70	1276
Ohio, Bielatowski 1	98	1289
Shell, Holston 9	57	1295
Louis Lilly, Gill & Goodner 1	80	1270
Wayne County—		
Pure, Leo Molt 1	189	3156
John Hubble 1	20	3094
Geo. Hubble 1	144	3110
Oil Well Dr. Co., Wells 1	*	3137
A. P. Muhlbach, Garrison 1	*	3077
Rock Hill Oil Co., Twist 7B	300	3356
White County—		
Nation et al, Belva-McIntosh 1	76	3405

"I" indicates gas input wells. "D" indicates salt water disposal well.

*Failures; †Junked; ¶Million cu. ft. gas.

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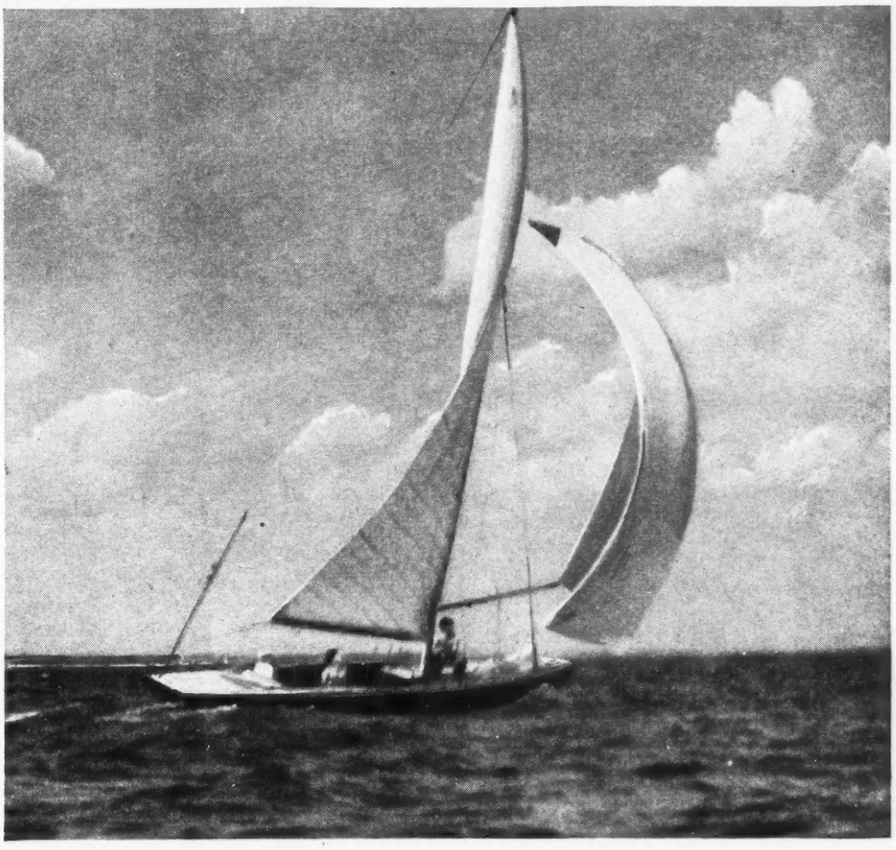

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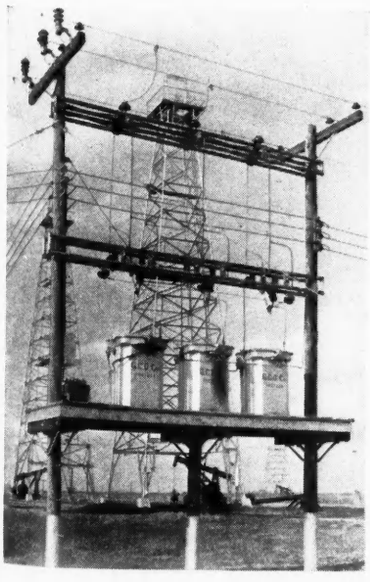

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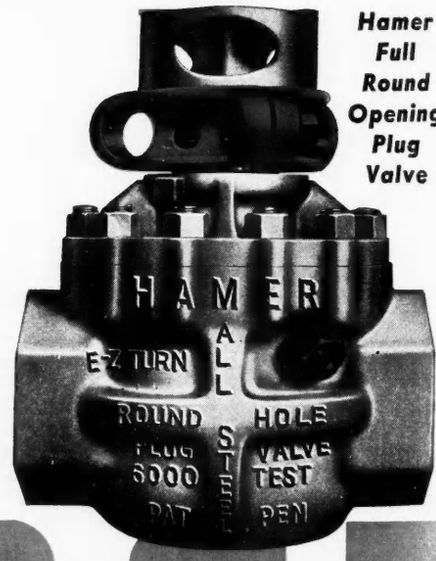

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covery of the first new pool, only 52.

The survey lists 37 oil and 2 gas pools as discoveries since January 1, 1937, the date generally set as the beginning of the current development boom. A fortieth pool, Mattoon, Coles County, has been abandoned, while 2 of the 37 oil pools, Sorento, Bond County, and Rinard, Wayne County, are listed as inactive.

A total of 3656 producing wells have been drilled in new pools, in addition to 276 dry holes put down within ¼ mile of production.

The following summary, by counties, gives the status of new pools:

Bond County—Sorento, 1 producer. Clay County—Clay City, 315 producers, 18 dry, 5 drilling, 10 rigs, 3 rigging up and 1 location. Flora 15 producers, 5 dry, 1 drilling, 1 rig. Iola, 1 producer, 2 dry. Clinton and Marion counties—Centralia, 550 producers, 42 dry holes. Coles County — Hutton, 2 producers. Fayette County—Louden-Beecher City, 990 producers, 54 dry, 10 drilling, 49 rigs, 12 rigging up and 17 locations; St. James, 40 producers, 3 dry, 2 drilling, 1 rig. Franklin County—Whittington, 1 producer. Gallatin County—Junction, 3 producers.

Jefferson County—Dix, 4 producers, 1 rig and 1 rigging up; Roaches, 4 producers, 3 dry and 1 rig; Marcoe, 2 producers and 1 rig; Elk Prairie, 1 producer; Ina, 1 producer. Lawrence County—Russelville gas, 23 producers, 5 dry holes, 4 rigs. Marion County—Patoka, 104 producers, 20 dry; Salem-Lake Centralia, 1145 producers, 46 dry, 25 drilling, 54 rigs, 8 rigging up and 5 locations; Tonti, 8 producers, 3 dry, 3 drilling, 3 rigs and 2 rigging up. Richland County—Noble, 186 producers, 33 dry, 9 rigs, 5 rigging up and 1 location; Schnell, 4 producers, 5 dry; Olney, 36 producers, 11 dry. Shelby County—Stewardson, 1 producer.

Wabash County—Griffin pool, 8 producers, 2 dry, 13 drilling, 8 rigs, 2 rigging up and 1 new location; Mt. Carmel, 1 producer. Washington County—Cordes, 44 producers, 3 dry, 1 drilling, 3 rigs, 1 rigging up and 2 locations. Wayne County—Rinard, 1 producer and 2 dry; Cisne, 44 producers and 1 rig; Boyleston, 15 producers, 3 dry, 1 drilling, 3 rigs; Aden, 4 producers, 2 dry; North Aden, 51 producers, 6 dry, 1 rig, 3 rigging up and 1 location; Enterprise, 29 producers, 3 dry, 1 drilling, 3 rigs, 4 rigging up, 1 location; Mt. Erie, 1 producer; Barnhill, 12 producers, 2 dry, 4 drilling, 2 rigs, 2 rigging up and 1 location; Goldengate, 2 producers; Leech Township, 3 producers, 1 dry, 1 drilling. White County—Mill Shoals, 2 producers, 1 drilling, 2 rigs, 1 rigging up and 1 location; New Harmony, 1 producer; Storms gas, 1 producer.

Ohio Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Athens County—		
C. J. Ross, G. P. Ackley 5	10	470
G. & R. Oil Co., P. W. Grosvenor 4	7	512
C. W. Neezum, E. Butts 1	¶.20	1446
Coshocton County—		
Preston Oil Co., H. Danaker 6	75	3200
Licking County—		
J. W. Rutledge et al, T. S. Moran 7	100	3117
Ohio Fuel Gas Co., E. E. Kidwell 1	¶.56	2662
Medina County—		
Swan & McDwitt, L. L. Eaken 19	5	360
Noble County—		
George Jewell, Muskingum Watershed 1	¶	600
Preston Oil Co., A. Miller 1	¶.10	1511
Putnam County—		
Pembers & Masters, J. Smeed 1	¶.40	1390
Stark County—		
Obermiller Bros., E. Miller Heirs 1	¶.33	4525
Washington County—		
Herlan & Schramm, L. J. Ward 16	2	976
George Yaste, E. Sheets 2	2	545
R. W. Porter, Perdew 1	¶.36	1402

*Failures; †Junked; ¶Million cu. ft. gas.

More Illinois maps

Urbana, Ill.—The Illinois Geological Survey last week announced addition of 4 detailed oil and gas development maps to its series covering important areas in that state. They cover the Patoka area, Townships 4 to 6 north, and Range 1 west to 2 east; the Roaches area, Townships 1 to 3 south and Range 1 west to 2 east; the Olney area, Townships 4 to 6 north and Range 9 east to 14 west; and the Albion area, Townships 1 to 3 south and Range 9 east to 14 west.

The maps show, as of August 8, 1939, towns; main roads; minor roads in developed areas, section, township and county lines; well locations, rigs and drilling wells, and oil, gas, dry and abandoned wells. The scale is two inches to the mile.

Blue line prints may be obtained at cost of printing and postage, totaling 60 cents for each map, from Enid Townley, State Geological Survey, Urbana, Illinois.

Kentucky Fields

Wildcats in Henderson and Butler counties abandoned

Owensboro, Ky.—M. P. Evans' Wilbur Givens 2, wildcat 700 feet from the east line and 1200 feet from the south line, Section 14-H-33, Butler County, found water with oil saturation in sand below 315 feet. It was abandoned at 320 feet.

Another wildcat failure of the week was Belmont Quadrangle Drilling Company's Wm. Watkins 1, 1800 feet from the north line and 1300 feet from the east line, Section 24-P-24, Henderson County, which was abandoned when it failed to find saturation in the McClosky.

In adjoining Daviess County, Ohio Oil Company's Seay Heirs 1, 1050 feet from the west line and 1350 feet from the south line, Section 7-N-29, was a new wildcat start. It was drilling at 250 feet.

Kentucky Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Christian County—		
Keith & Spitznagle, W. D. Bowles 1	*	810
Daviess County—		
J. C. Ellis, Fee 1	150	1172
A. Teller, E. F. Lebold 1	75	1259
C. E. Daugherty et al, Rex O'Flynn 7	50	1190
Cane Run Petroleum Co., R. E. Jackson 12	20	679
H. B. Cameron & W. E. Hupp, L. Akin 2	20	1211
Ohio Oil Co., Steve Combs 3	*	1800
Farmer & Chenault, J. M. Clark 1	*	1433
Floyd County—		
Kentucky-W. Va. Gas Co., McKinney 5253	¶.63	1560
Hancock County—		
Angle & Easton, Taylor 1	*	1173
Ray Beard et al, Barnett 1	*	724
Henderson County—		
Magnolia Petroleum Co., Green 2	200	2186
M. Grubb et al, Cooksey 1	40	2200
Belmont Quadrangle Dr. Co., Watkins 1	*	....
McLean County—		
Reynolds et al, O. Howell 1	100	1156
Ohio County—		
A. Teller, Lillie Bean 1	*	625
Wolfe County—		
Andrews & Lowerback, Dewey Rose 2	*	2800

*Failures; †Junked; ¶Million cu. ft. gas.

Indiana Fields

Posey County wildcat completing in Cypress

Evansville, Ind.—Somers & Egan's Keck 1, NE NE NE 34-2s-14w, Bethel Township, Posey County, to the west of dry holes, was being completed as a good Cypress sand producer. Saturation cored totaled 17 feet. Derrick was going up for an east offset on the J. E. Keck farm, to be drilled by Lon Huddleston. In this same township, rods and tubing were being run for a pumping production test of H. G. Lewis & Joe Minton's L. P. Hill 1, NE NW SE 35-3s-14w.

Seven new wildcat starts were listed in Indiana last week, scattered in as many counties. In Daviess County, Ralph H. Neely & J. S. Young, Jr.'s E. Stuffle 1, NE NE 29-4n-5w, was spudded; in Dubois County, A. E. Wenning's Fee 1, 200 feet from the south line and 200 feet from the west line, NW NE 8-1s-4e, was a location; in Gibson County, Hulman et al's (Deep Vein Coal Co.'s) Hollis 1, SE SW NE 36-2s-11w, was moving in machine; in Knox County, LeRoy Garrison's George Schwab 1, C SE NW 9-5n-8w, Widner Township, was moving in materials; in Owen County, J. C. Ellis & W. H. Young's Rice 1, NE NW 29-11n-3w, was a location for a cable tool test; in Posey County, Haynes & Thomas' Seifert 2, NE NW SE 19-6s-12w, was drilling at 100 feet; and in Warren County, A. J. Morris' D. Payne 1, 200 feet from the south line and 50 feet from the east line, SE NE 5-22n-8e, was a location.

New York Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegany County—		
Bradley Prod. Corp., Star farm, Bolivar	3	1411
Knight farm, Wirt	8	1347
Hardman & Thompson, Hazzard farm, Wirt	5	1346
LeSuer Oil Co., Crandall farm, Bolivar	6	1280
MacDonell Oil Co., MacDonell farm, Bolivar	7	1273
L. N. Shaner, Shaner farm, Bolivar	8	1372
Ebenezer Oil Co., Vincent farm, Scio	6	1048
George Storms, White farm, Alma	7	1375
White farm, Alma	8	1382
Bradley Prod. Corp., Monitor farm, Alma	9	1296
W. W. Franchot, Reddy farm, Alma	5	1365
Allegany: Water Intake Wells—		
Custer Oil Co., Whitcomb farm, Scio	..	1260
C. Christman & Son, Underwood farm, Scio	..	1355
Underwood farm, Scio	..	1364
Bradley Prod. Corp., Monitor farm, Alma	..	1270
Monitor farm, Alma	..	1279

*Failures; †Junked; ¶Million cu. ft. gas.

West Texas Fields

Cedar Lake wildcat completed as flowing oil producer. Crockett pool well comes in flowing when deepened.

Midland, Texas—Flowing production developed by Stanolind Oil & Gas Company's Rayner 1, first test for the Cedar Lake geophysical prospect in northeastern Gaines County, establishes a new oil pool for the north portion of the Permian Basin, 26 miles northeast of the Seminole field, nearest production. This wildcat has been tagged as a probable producer for several weeks. First oil saturation was encountered at 4661 feet. An aggregate of 39 feet of oil pay was logged in penetrating the section 104 feet to 4765 feet.

Formation tester used at 4645-98 feet yielded 1000 feet of 36-gravity oil and rotary mud in 3 hours. The hole was unloaded through tubing at 4765 feet, using Bradenhead gas from the Yates zone. The well flowed natural 60 barrels of oil in 30 minutes and quit after standing 9 hours. A second flow of 18 barrels of oil in 1½ hours followed after standing 5½ hours. The volume of gas was not sufficient to maintain a steady flow, although the fluid level assures a commercial producer. Coring was resumed last mid-week to try for a lower oil-saturated zone and the formation to the 4830-foot level registered nominal porosity with broken oil stain.

Due to the isolation of this wildcat from pipe line and railroad facilities it will not cause an immediate development campaign even though it makes a prolific well. The company holds lease on all close-in acreage and its first expiration falls next July, involving a 3-section lease to the west of the discovery site. The fee on these tracts is owned by Paul Steed, Thornton Lomax and Ernest Wilson, Dallas oil operators, with Humble Oil & Refining Company holding a quarter of the royalty. The lake development will require the driving of piling because of thick salt beds on the surface.

Rayner 1 logged top of Yates at 2700 feet, first brown lime at 3740 feet and top of solid lime at 4290 feet, with an elevation of 3066 feet. Chert section was topped at 4455 feet. Seven-inch pipe was cemented at 4448 feet. It was prepared to explore the lower Permian.

Humble Oil & Refining Company's Westheimer-Daube 1, projected 9500-foot test on a large drilling block in northwestern Cochran County, was drilling at 3460 feet.

The volume of completions dropped sharply the past week as result of numerous wells being drilled in and shut down without a production test. Completions were deferred on some wells because oil was not available to use in circulating and for acid load. Pipe lines removed all tendered oil from lease tankage. Shortage of gas obtained from oil wells caused the suspension of numerous rigs while new starts were held to a minimum by all operators.

West Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Means)—		
Humble, J. S. Means 63	1660	4530
J. S. Means 65	1527	4527
Ector County (Foster)—		
Arkansas F. O. Co., Johnson 1-C	698	4228
Shell, Witcher 5-B	1268	4245
Stanolind, E. F. Cowden 17-A	932	4185
E. F. Cowden 20-A	615	4195
E. F. Cowden 18-B	1096	4175
York-Harper & Sloan-Zook Co., Foster 2-D	1998	4356
Ector County (North Cowden)—		
Rushwold Oil Co., Woods (south) 3	2524	4425
Howard County—		
F. H. E. Oil Co., Snyder 1	165	2955
Sinclair Prairie, Dodge 61	270	2795
Jones County—		
Condor Pet. Co., H. Sayles 23	558	1974
Fain-McGaha Oil Corp., Ferguson 2	241	1902
Bert Fields-Carey King, Humphrey 7-B	3120	3260
Sandy Ridge Oil Corp., Steffens 10	180	1915
Loving County (Wheat)—		
Fred Hyer et al, L. B. Russell 1	*	4244
Pecos County (Payton)—		
Cities Service, Dorr 4	132	2097
Pecos State Oil Co., Pecos River 13	217	2077
Pecos County (Taylor-Link)—		
D. Breeding et al, University-Humble 2	665	1685
Pecos County (Wildcat)—		
E. M. Thomasson Prod. Co., Young-Humble 1	*	1903
Schleicher County (Page)—		
Lone Star, Page-Shell 1	¶6.4	5723
Scurry County (Sharon)—		
Yarbrough & Wheeler, Bishop-Sterling 1	5	2520
Scurry County (Northwest)—		
Moran et al, Hardee 1	88	1776
Taylor County—		
Murray et al, Evans 2	156	1754
Winkler County (Henderson)—		
W. K. Royalty Co., Walton-Humble 8-B	1996	3060
Winkler County (Hendrick)—		
Bates-Reading Oil Corp., Cowden-Shell 2	365	3020
Yoakum County (Bennett)—		
F. M. Allison Prod. Co., Bennett 4	1264	5238
Yoakum County (Wasson)—		
Aloco Oil Co., J. E. Hill 1	800	5200
Carter Wilder-Saltmount 1	1021	5175
Devonian Oil Co., Ory 4	1402	5110
Humble, Ed. Randall 4	681	5123
Milhoan Prod. Co., Willard 2	1186	5153
Shell, Baumgart 3-A	1016	5166
T. P. Coal & Oil Co., Cecil-Bloomer 2-A	1236	5120

*Failures; †Junked; ¶Million cu. ft. gas.

Crockett Well Flows

First flush production in the Crockett shallow pool, northwestern Crockett County, materialized when Gilcrease Oil Company's University-Humble 1-13, NE NW SW Section 13, Block 14, flowed 2205 barrels, 7 percent water, after deepening from original pay at 1365-1412 feet to 1444 feet. The flow was made through casing, and was made possible by an unusually soft section of lime. Other nearby tests are to be deepened.

Extension of the Permian pay in the Sand Hills field, Crane County, ½-mile northeast was assured when Humble Oil & Refining Company et al's J. B. Tubb 1-C, SWc PSL Section 6, Block 32, logged broken saturation at 4270-4360 feet and 4410-20 feet. Electrical formation survey indicated 26 feet of good saturation and porosity. Operations were suspended until the production holiday expires after landing 5½-inch casing at 4290 feet, and washing the hole with oil through tubing set at 4396 feet. This outpost registered a favorable structural position in topping the Yates at 1490 feet, with an elevation of 2611 feet. Humble Oil & Refining Company owns lease on the sections adjoining to the south, west and southwest.

Gulf Oil Corporation's McKnight 5, C SE PSL Section 1, Block B-21, northwest outpost for the Gulf-McKnight sector of the Sand Hills structure, is correcting crooked hole at 4980 feet, and is due to deepen until sulphur water is found in the lower Permian. It will not be carried to the Ordovician, as it occupies a low structural position.

Gulf Oil Corporation's Wristen 5, first deep test for the Shipley pool, Ward County, will abandon efforts to complete a commercial oil well in the regular Permian, and is reaming 12½-inch diameter hole to cement 10¾-inch casing at 2765 feet. It was originally scheduled to drill to 7500 feet to explore the deep zones, but plans were altered temporarily when it appeared a pumper would materialize in the shallow horizon.

West Central Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Callahan County—		
Johnson et al, Hughes 1, sec 127	*	886
Warren et al, Cozart 2	146	1660
Coleman County—		
States Oil Corp. et al, Stockard 3	115	3629
Eastland County—		
L. Slusher & J. Barton, Lyerla 1	5	1455
Shackelford County—		
Lee & Key, Lee 5	*	1151
Smart & Sharrock, Blanton 3	4	678
Tal-Vez Oil Co., McKeever 2	2300	3177

Texas Panhandle Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Gray County—		
Warner Oil Co., Chapman 8	1483	2627

*Failures; †Junked; ¶Million cu. ft. gas.

Shallow oil strike in East Central Jones County

Abilene, Texas.—East Central Jones County recorded a shallow oil strike that was drilled on the strength of showings passed up by a wildcat failure in 1931. The pool discovery is N. H. Martin & Sons' Wirt Davis 1, SWc of Subdivision 7, Mrs. F. M. Smyth Survey No. 3, which swabbed 4 barrels of oil hourly on 12-hour test from sand at 1713-16 feet. It is 3 miles southwest of Lueders, and an east offset to Andy Urban et al's Riddle 1, which indicated a 30-barrel pumper at 1700-17 feet, but in drilling to 1910 feet failed to make a successful plug back. Later failures in the general area indicate that the pool will be small.

Nolan County's 2 active wildcats are seeking deep production. Plymouth Oil Company's McClure 1, SW NE NW T&P Section 49, Block 23, which is slated to drill to the Ellenberger, or 8000 feet, was coring at 2960 feet. Base of San Angelo lime was cal'ed at 1350 feet, and top of the Valera anhydrite shale at 2950 feet, with an elevation of 2396 feet. Green, Owens, Peddicord et al's Tipton 1, near SE NW SW T&P Section 43, Block 19, northeast corner of the county, was drilling dry sand at 4560 feet, having successfully sidetracked junk in plugging back from 4464 feet to 2640 feet. Oil saturated lime was reported in the original hole at 4449-64 feet.

North Texas Fields

Hull-Silk production is extended one mile to northeast.

Shallower lime pay found in Nacona, Montague County.

Wichita Falls.—Important developments in North Texas the past week embraced the discovery of a shallower lime zone in the Nocona pool; deep oil strike on the west side of the Bryson district; and the expansion of the deep oil horizons in the Bonita and Hull-Silk areas. The district has experienced a sharp decline in completions that will be reflected by routine reports for several weeks hence because of the production holiday.

Expansion of the lower Strawn pay in the Hull-Silk field, northeastern Archer County, 1 mile northeast, thereby halving the interval of unexplored territory separating it from the Sikes pool, is to be followed by an aggressive development program. Deep Oil Development Company and R. G. Drilling Company's Dr. J. A. Little 1, SWc NE HT&B Section 2, A-811, paved the way for the eventual linking of the two areas in logging oil sand at 4315-30 feet. It is level with the nearest 4300-foot producer in the Hull-Silk field. Seven-inch pipe was landed at 4320 feet to complete. Bert L. Ligon et al assumed contracts to drill 3 free wells each on 260-acre leases in return for 50 percent working interest. Ligon et al obtained from Deep Oil Development Company, Grover Bullington et al the west 60 acres of east 100 acres of north 131 acres of S½ Section 2. An adjoining 60 acres, also situated in SW Section 2 and on a strike from Little 1 and the Hull-Silk field, was assigned by Paul Steed, C. B. Long and Sam Rugeley, who acquired their mineral interests when the area was receiving shallow exploratory tests. The latter's contract specifies the use of new pipe and equipment, and the completion of 3 wells within 9 months. R. G. Drilling Company is reported to have been awarded contracts to drill both leases. British-American Oil Producing Company's J. R. Parkey 1, SWc H&TC Section 11, Block 3, north offset to the company's Mankins pool deep-lime discovery in northwestern Archer County, gauged 750 barrels of oil natural on completion test through casing from Caddo, or Bend lime at 4653-84 feet. The performance of this second test for the pool will encourage development.

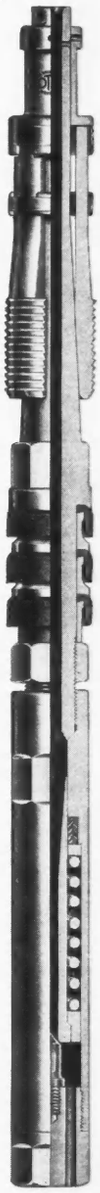
Oil production from the upper Strawn was indicated by two outposts for the Nocona deep pool, Montague County, and one is trying for a completion after missing the regular pay. L. S. Youngblood and R. L. Foree's Davis 1, near center of 6-acre lease, J. D. Jennings Survey, A-389, showed sufficient free oil on drill-stem test to make a commercial producer from broken sand at 4317-45 feet, but swabbed all water in testing the projected pay at 4672-78 feet. The hole was plugged back to 4528 feet to perforate 5½-inch casing with 90 shots at 4317-38½ feet. Swabbing test was in progress late last week. Rogers & Rogers' Burnett 2, 830 feet southeast of their pool discovery, flowed oil with fair gas volume when tester was used on the upper Strawn at 4278-4307 feet. Drilling was resumed to try for production in the regular zone, which was topped at 4621 feet for a low structural position, and proved to be mostly sandy-shale and lime in coring to 4650 feet. Unless the upper zone yields attractive production and extends eastward and to the northeast, the pool may be spared townlot drilling and close well spacing on small sites adjoining the town on the west.

United Producers Company and Continental Oil Company's Braman 1, NWc G. R. Jaquez Survey, A-393, southeast offset to the 2900-foot discovery pay in the Bonita pool, eastern Montague County, is slated to become the second lower-Strawn producer for the area. Pipe was due to be landed late last week to test at 3841 feet. Braman 1 passed up oil sand at 2904-17 feet and 3115-38 feet to explore the more productive lower horizon. Top of granite wash was called at 3740 feet, with oil showing in granite wash at 3746-85 feet. Oil saturated sand was logged at 3798-3809 feet and 3836-41 feet, and later substantiated by an electrical formation survey. Joe Benton & J. W. Holmes' Bowers 2, located in NEc of their discovery lease, made a natural flowing well last July to prove this lower oil zone at 3853-69 feet. The new prospect is 30 feet higher on this pay. Phillips

North Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (Hull-Silk)—		
Blackwell O&G Co.-Helmerich & Payne, Wilson-McCrory 4	1000	4322
Archer County (K-M-A)—		
White-Duncan & Dye, Ferguson 3, blk 14	480	3867
Archer County—		
Cable Oil Co., Crowley 7, sec 28	9	979
Fresno Oil Co., Prideaux 24	*	714
Archer County (Wildcat)—		
Gilmore et al, Williams 1	*	770
Baylor County (Seymour)—		
British-American O. P. Co., Green 1-B, sec 218	*	3400
Baylor County (Wildcat)—		
Consolidated Oil Co., Green 1, sec 230	*	3225
Clay County—		
Tanner et al, Rigsby-Texaco 11	5	250
Clay County (Wildcat)—		
Consolidated Oil Co., Bevering-Foster Pet. 1	*	3090
Cooke County—		
C. & L. Oil Co., Perkins 5	41	887
McDaniel & Beecherl, J. Weisman 1	70	710
Cooke County (Wildcat)—		
Trumter Oil Co., F. Hess 1	*	1982
Motley County (Wildcat)—		
Santa Rosa, Inc., Bird 1	*	350
Wichita County (K-M-A)—		
Buffalo Oil Co., Ferguson 16	456	3815
Ferguson 19	360	3819
Cooper et al, Waggoner Bros. 55	848	3766
Grace & Wood, Birk 2	1192	4028
Wichita County—		
Kohlman et al, Mertens 15, sec 2	2	1296
Magnolia, Reilly 153	†	1006
Mogren et al, Mertens 1, sec 2	4	941
Panhandle, Burnett 14, sec 6	4	1592
Wilbarger County (Wildcat)—		
Consolidated Oil Co.-D. E. Hepler, Waggoner Est. 1-CC, sec 36	250	4065

*Failures; †Junked; ¶Million cu. ft. gas.



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Petroleum Company's Custers 1, east offset to Bowers 2, was drilling at 2900 feet.

Western Jack County recorded a Marble Falls strike when Nelson Oil Syndicate's O. M. Birdwell 1, ½-mile northwest of 2800-foot sand in the Bryson field, developed natural flow from Marble Falls sand at 4380-4405 feet. The well flowed 50 barrels of oil by heads in 3 hours through casing, and later tested 15 barrels on ½-hour gauge through ⅛-inch tubing choke. It is adjacent to the Young County line, and a west offset has been authorized by Taubert & McKee, Inc.

No shows have been reported by the two projected Ordovician lime tests on the west side of the North Texas district. In Cottle County, Magnolia Petroleum Company's Alice Green 1, John M. Grogan Survey, 10 miles southwest of Goodlett, was drilling shale at 5363 feet. Elm Creek lime was called at 2615-3125 feet, and top of Bluff Creek at 3350 feet. Amerada Petroleum Corporation's Rice 1, near NW SE NW W&NW Section 81, Block H, 6 miles southeast of Quanah, was drilling shale at 5776 feet, having topped lime, tentative listed as the Strawn, at 5272 feet.

East Texas Fields

Big field's pressure rises during shut-in period

Austin. — The average bottom-hole pressure in the East Texas oil field has risen 31.39 pounds while the field was shut down from August 12 to August 22, according to figures prepared by the Texas Railroad Commission. The average pressure August 12, was 1083.42 pounds, and on August 22 it was 1114.81 pounds. In all but one instance commission engineers found pressure had risen, and this one well showed no change. For that reason it appears the commission will have an excellent basis for contending that shutdown resulted in prevention of waste in at least one field, whether it will be able to offer similar proof in others or not.

East Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Gulf, Thrash 22 (83.56-ac)	4000	3773
Kilgore Area—		
Humble, Peterson 46 (222.1-ac)	5400	3586
Overton Ref. Co., I&GN Ry. Co. 8-B	1200	3551
Potter Bros. Prod. Co., Banyuelle 2	1500	3570
Longview Area—		
Humble, Holland 41 (201.63-ac)	7000	3536
Kimberlin et al, Richey 1 (1.61-ac)	7200	3585
Cherokee County (Rusk Pool)—		
J. R. Bunn Drl. Co. et al, Huggins-Shell 1	*	5170
Kaufman County (Wildcat)—		
Tyler & Smith, Trinity Farms Co. 1	*	3540
Limestone County (Mexia)—		
Baggett et al, Thompson 1	*	3340
Smith County (Wildcat)—		
Thomason et al, Bartlett 1	*	2085
Titus County (Wildcat)—		
Superior, Hargrove 1	*	5925
Marion County (Jefferson-Rodessa)—		
Arkansas Fuel Oil Co., B. Simms 1, C. Grayson sur	240	6154

*Failures; †Junked; ¶Million cu. ft. gas.

East Texas Proration

(*Continued from page 46*)

show that it is not getting its fair share of the oil in place beneath the leases, nor does it have under the current railroad commission order an equal opportunity to produce that oil. Detailed information was furnished to show physical conditions in the field and to demonstrate that sand conditions in the field were sufficiently regular to determine the amount of oil in place with a reasonable degree of accuracy. In addition to that, Humble presented data to show wells could be operated profitably at far lower allowables than the railroad commission grants now.

Independents, on the other hand, contended that sand conditions were highly erratic and that it would be impossible for the railroad commission to write a reasonable order attempting to divide the oil in place. They questioned Humble's cost figures and asserted that it would be impossible for many owners of small tracts with one or two wells to continue production with allowables materially lower than those assigned now.

While Humble presented no definite formula for allocating production, attorneys for the company insisted that the dominant factor should be acre feet of sand. They agreed that some weight could properly be given to position on structure, bottom-hole pressure, permeability, and similar factors. Engineers tendered as witnesses for Humble, declined to state how much weight should be given to each of these factors.

J. S. Hudnall, independent petroleum engineer of Tyler, who was presented as a witness in opposition to those offered by Humble, gave the only complete formula, which he recommended to the commission as proper if an acreage factor is to be included in the East Texas proration order.

This formula provides for a numerator, which would be written as follows: The number of acre feet of sand beneath a given tract, multiplied by the average per-well potential of the wells on the tract, multiplied by the bottom-hole pressure; the denominator would be the number of acre feet of sand in the entire East Texas oil field multiplied by the average potential of all wells in the field multiplied by the average bottom-hole pressure of all wells in the field.

First, however, Hudnall would assign 20 barrels to every well capable of producing that amount. This, he estimated, would mean a top allowable of 516,000 barrels daily to which he would add about 168,500 barrels to be distributed according to the formula.

He estimated that use of this particular plan would mean production of 491,000 barrels of oil daily on a five-day week. Since the field is producing approximately 150,000 barrels of water per day, that should be added to determine the total daily withdrawal of fluid from the field.

The cost figures presented by Humble showed that a flowing well may be produced at about $1000 a year while $1600 is the cost of producing a pumping well. Bruce Davidson, Humble engineer, testified that the following costs were "representative," based on a well for which $10,000 was paid and to which is added $3500 for pumping equipment.

Operating costs in proportion to allowable are set out below:

Allowable	Flowing	Pumping
5 Barrels	$0.60	$1.00
10	.30	.50
15	.20	.33⅓
20	.15	.25

Included in these operating costs were royalty of one-eighth and taxes. From this data, he progressed to the "operating profit" with the price of oil at $1.10:

Allowable	Flowing	Pumping
5 Barrels	$ 800	$ 160
10	2,555	1,916
15	4,310	3,673
20	6,068	5,429

With 90-cent oil the return was:

Allowable	Flowing	Pumping
5	$ 479	000
10	1,916	1,278
15	3,353	2,715
20	4,791	4,152

The next step was figuring how long it would take the wells to pay out. Two computations were made, with no interest charges, and with 6 percent charges, and in each case with the price of oil $1.10:

Flowing Wells	Years No Interest	Years 6% Interest
5 Bbls. allowable	12.5	50.5
7	6.5	10.6
10	3.9	5.1
12	3.0	3.7
15	2.3	2.7
20	1.65	1.8

Pumping Wells	Years No Interest	Years 6% Interest
5 Bbls. allowable	84.7	No Profit
7	15.7	260.00
10	7.1	12.2
12	5.2	7.5
15	3.7	4.7
20	2.5	2.9

The fact that one or more members of the railroad commission attended the first four days of the hearing indicated that they believed it would be of the greatest importance. Several executives and attorneys for other major companies operating in the East Texas field also attended the entire session, despite the fact that the hearing lasted six days.

During the course of the current shutdown, no discrimination has resulted from higher production allowed by the courts on leases owned by Rowan & Nichols and by Humble. However, when the field resumes operation, discrimination will result if owners such as Humble and Rowan & Nichols choose to take advantage of the allowances made them by the courts. Naturally, off-setting lease holders must then obtain similar injunctions to protect themselves from attacks by their royalty owners.

Several of the major companies have prepared and are ready to file petitions similar to Humble's, and they plan to file them unless the railroad commission promulgates a new order.

Southwest Texas Fields

Seventh new field this year indicated in Jim Wells County. Minor extensions made to several fields in Duval area.

Corpus Christi.—Jim Wells County again became the prime center of South Texas Gulf Coast interest as another wildcat gave promise of opening a new producing area. It would be the seventh discovery for this county in 1939.

C. E. Heard and I. W. Keys' Driscoll 1, three miles west of Wadsota and in the Las Animas Sola Grant, tried to blow out at 6770 feet when a core was being taken of a sand topped at 6758 feet. This sand likely is in the Hockleyensis zone, although no definite details are available on the paleontology. This well is on general trend with the Bandera field, opened several months ago by Magnolia Petroleum Company.

In the Reynolds field, also Jim Wells County, a third producing level was uncovered in the Frio zone with Tom Graham and Harry Mosser completing Mosser 4-A through perforations at 4817-21 feet. The well flowed at the rate of 75 barrels of 31-gravity oil per day through 3/32-inch choke, with 2750 pounds working pressure on tubing. Casing pressure was registered at 500 pounds. It had been carried to 5220 feet, having the regular pay. Other sands in this new field are at 5100 and 5175 feet.

About 1¾ miles south of the field, H. R. Smith, Inc.'s J. H. McGehee 1 drilled to 5621 feet, found a sand section at 3409-20 feet, and has been plugged back to test that level. It would extend the field and open a new pay if productive.

Magnolia Petroleum Company's series of tests in D. O. Maun 1, one mile west of the LaGloria field discovery, failed to net a commercial producer and it is drilling ahead below 6950 feet. It had a sand zone at 5800 feet showing oil and salt water.

Location has been made for a third well on the prospect. It will be Stolz 1, 3500 feet north of the discovery of the LaGloria field.

Wellington Oil Company completed two more producers in the 6500-foot sand in the South Clara Driscoll field of Nueces County to bring the total number to three. The acreage proved in this zone now amounts to about 250 acres with its zone expected to ultimately cover a much larger area.

Hiawatha Oil & Gas Company could not recover drill stem stuck at 9880 feet in Smith 6, in the Saxet field of Nueces County, and the hole has been plugged back to complete in a regular 6300-foot sand. It was opening a new zone for the area at 9862-80 feet, where the well showed both oil and gas.

Wellington Oil Company encountered a deep sand in the one-well Angelita field of San Patricio County to again place this area in the limelight. Several tests in the area have failed to find production at the discovery level and were abandoned. Welder 6 cored sand with oil show at 6858-67 feet and at 6883-84 feet, the section between 6867-83 feet being sandy shale. A drill-stem test was run from 6883-89 feet, recovering 100 feet of oil, 80 feet of mud and oil, 750 feet of salt water and 9 pounds pressure in 10 minutes. Bottom-hole pressure was 1500 pounds. It is going ahead. North of this field, Seaboard Oil Corporation's Smith 1 is being commenced as a 7000-foot operation.

On the highly touted Bonnie View prospect southeast of the LaRosa field of Refugio County, Sunset Oil Company and associates abandoned Heinen 1 at 7017 feet. It had only minor shows and ran about normal structurally.

An extension to the East Plymouth field, San Patricio County, to the southwest, was possible with Republic Natural Gas Company et al's Galler 1, Section 26 and one mile from production, running electric log at 6036 feet. Hole was plugged back and casing set about 5200 feet for a series of tests up the hole.

In Jackson County, a slight northeast extension to the discovery area of the West Ranch was apparent in Magnolia Petroleum Company's West 18-A. The well, 1479 feet northeast of 14-A, present outpost, cored gas sand at 5038-90 feet, dirty sand with gas odor at 5090-5105 feet and oil sand at 5105-17 feet. Casing was landed at 5107 feet for completion. West 17-A, on the west side of the north extension area, found sandy section at 5140-70 feet and on drill-stem test at 5157-70 feet recovered 2500 feet of salt water. It was going ahead to the 5500-foot zone.

Humble Oil & Refining Company apparently was providing an east extension to the north area with Vanderbilt State 1-A, in Lake 1. It flowed dry gas through perforations at 5545-55 feet, then plugged back for a completion attempt through perforations at 5500-05 feet.

John Mayo and Trinity Drillers, Inc.'s Vogt 1, discovery well of the Victoria field in Victoria County, was shut in for orders after flowing gas and some oil through perforations at 2552-55 feet.

About 11,500 feet northeast of the discovery well of the Bird Island field in Laguna Madre, Kleberg County, Pure Oil Company has started State 1-171. The well will be 440 feet out of the west corner of Tract 171 and in the Laguna. It is projected to about 9000 feet.

New fields in Duval get minor extensions

Laredo.—Minor extensions were being provided to several new fields in Duval County as Pettus sand wells were being tested. In each case, these tests indicate second producers for these pools.

Hiawatha Oil & Gas Company's Southland Life Insurance Company 16, diagonal southeast offset to the discovery of the Southland pool, was ready to test through perforations. The well had been carried to 5923 feet, but was plugged back to 5393 feet and casing landed at that point. The well had established a new sand for the field at

South Texas Completions
SAN ANTONIO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bexar County—		
Harris, Schroeder 1 (WC), L. Bust sur 37	*	1005
Caldwell County—		
Turner, Cardwell 1 (Lytton Springs)	*	1535
Edwards County—		
Alderfer & Davis, Earwood 1 (WC), CCSD & RGNG sur 158	*	85
Williamson County—		
White, Sitman 1 (WC), T. A. Moore sur	*	1052
CORPUS CHRISTI DISTRICT		
Brooks County—		
Humble, McGill 18 (Kelsey)	150	4742
Calhoun County—		
Buchanan & Blanco, Morris & Dunwoody 13 (Heyser)	350	5581
Hidalgo County—		
Drake & Edgerton, Guerra 3 (Samfordyce)	175	2970
Jackson County—		
Moore & Ahern & Cron & Gracey Heard 1, (WC), Morris & Cummins sur 13	†	4965
Jim Wells County—		
Atlantic, Bankers Mortgage 1-D (East Alice)	500	5381
Graham & Mosser, Mosser 4-A (Reynolds)	500	5220
Morgan, Fee 2-F (Reynolds)	500	5172
Shell, Little 2 (East Alice)	500	5343
Karnes County—		
Meaders, Ruhman 1 (WC), J. Richardson sur	*	3254
Nueces County—		
Cosner, Lehman 1 (WC), London area	*	6010
Sinclair Prairie, Isensee 8 (Saxet)	400	4875
Southern Minerals, Isensee 8 (Saxet)	350	4735
King 4-B (Richard King)	650	6163
King 7-B (Richard King)	600	6154
Williams, Roberts 1 (WC), Clara Driscoll area	*	5746
Wellington, Dugger 9 (South Clara Driscoll)	450	6942
Richardson 3 (South Clara Driscoll)	400	7032
Refugio County—		
Humble, Thompson 4 (WC), Cranell Prospect	*	6374
Quintana, O'Connor B-7 (Melon Creek)	*	6500
Williams 3-B (Tomoconnor)	1250	5936
Sunset, Heinen 1 (WC), sec 10	*	7017
San Patricio County—		
Easterwood, West 1 (East White Point)	600	5663
Plymouth, Mayo 1 (East White Point)	650	7402
Solar & Ficke 5 (East White Point)	650	5658
Shell, Kirk 4 (East White Point)	¶6	5665
LAREDO DISTRICT		
DeWitt County—		
Richardson, McCurdy 1 (WC), Valley View area	*	1650
Duval County—		
Clark & Cowden, Peters (Superior) 2-B (Rancho Solo)	55	1825
Hiawatha, Parr 27 (North Sweden)	*	6206
Jim Hogg County—		
Magnolia, Yzaguirre 1 (WC), 4½ mi se Agua Nueva-Jose Manual Ramirez "Agua Nuevada Abajo" gr	*	5855
McMullen County—		
Richardson & McKenzie, Franklin (Green) 1 (WC), BS&F sur 67	*	2620
Smith & Hamill, Kountz 5 (San Jose)	*	1184
Starr County—		
Hillman, Gonzales 2 (WC), sh 43, porc 70	*	1380
Liberty, Kelsey Bass 1-A (WC), sur 71	*	1780
Magnolia, Fee-Guerra 2 (WC), So. La Reforma discovery	¶5 & 80	6566
Packer, Guerra 1 (WC), sh 253, porc 69, (blk 6)	*	1408
Zimmerman, Guerra 2 (WC), sur 299	*	850
Webb County—		
Boysen & Jones, Watkins 4 (WC), sec 11	*	790
Morton, Garcia & Villareal 2 (North Killam)	*	2538
Schimmel, Laurel 1-A (North Killam)	*	3060
Zapata County—		
Interstate, Martinez (Shield) 3 (Mirando Valley)	120	1848
Nordan & Morris, Gutierrez 47 (Escobas)	† & *	1317

*Failures; †Junked; ¶Million cu. ft. gas.

4488-4517 feet, where it showed for a large gasser. The well was tested in the Pettus sand, regular pay for the field, at 5284-5310 feet, showing for a high gas/oil ratio producer.

Hawkins and Howell's Garcia 1, southwest offset to the discovery of the Chiltipin field, is a gasser showing a little oil through perforations at 4805 and 4808-15 feet. Flowing through ⅛-inch choke, the well showed pressures of 1400 pounds on tubing and 1650 pounds on casing.

J. B. Blanchard et al's Parr 2, outpost to the Muralla field, cored broken sand and shale between 4677-4718½ feet and on a series of drill-stem tests showed a small amount of oil with a large volume of gas. It was ready for completion, expected to make a small well.

Starr County distillate well opens new area

Mission.—Magnolia Petroleum Company has definitely established a new distillate producing area for South Texas with completion of Guerra-Fee 2 in the base of the Frio. The well, located about 4¼ miles southwest of the LaReforma field in Starr County, flowed at the rate of 80 barrels of 51.5-gravity distillate and 4,360,000 cubic feet of gas per day through 9/64-inch choke and showed 2050 pounds working pressure on tubing. Closed-in pressure on casing was 2350 pounds.

The test had been carried to 6566 feet, but plugged back and was completed through perforations at 5810-18 feet, where 20 shots had been made. The well found sand with distillate showing at 5798-5832 feet.

This discovery is located 2970 feet from the west line and 2310 feet from the south line of the tract in the Santa Cruz grant. Magnolia Petroleum Company holds the bulk of the acreage in the vicinity, but Sun Oil Company has some interests in the sector.

Texas Gulf Coast

Chocolate Bayou, Brazoria County, wildcat makes oil flow.

Wharton County wildcat indicates production from Frio.

Houston.—Discovery of a new Frio sand field at Chocolate Bayou, prospects of a producing wildcat in Wharton County, and the failure of outposts to several proven producing fields were highlights of the Texas Gulf Coast the past week.

A new oil field was discovered in the Chocolate Bayou area, Brazoria County, last week when Glenn H. McCarthy's Houston Farms Development Company 1 came in flowing 45-gravity oil from Frio sands at 9865 to 9875 feet. The oil was turned into tanks with no estimate on the volume it was making. Tubing pressure was reported as being 1600 pounds. No information has been given out by the operator. The hole is said to have been drilled below 10,380 feet and 5½-inch casing set at 10,250 feet. Tests from around 10,200 feet showed salt water and the hole was plugged back. It was completed around 9865 feet. A sand also was logged around 8893 feet which might produce oil. This sand showed up good on an electrical log.

A new Frio sand oil field may be opened on the Danevange prospect, Wharton County, the coming week when The Texas Company tests Peters 1, E.T.R.R. Section 101. Casing has been run to bottom and salt water sands cemented off for a production test. A 10-minute drill-stem test from 5203 to 5231 feet through ¼-inch chokes reecovered dry gas at 610 pounds pressure and 30 feet of drilling mud. The bottom-hole pressure was 2350 pounds. The hole was cored deeper, and an 11-minute drill-stem test, made at 5231 to 5259 feet, recovered 180 feet of fluid, 90 feet gas and oil cut mud and 90 feet oily salt water. Pressure was 590 pounds.

League City, Galveston County, was extended southwest last week when Phillips Petroleum Company completed West Production Company 1. The well, perforated with 22 shots at 8690 to 8697 feet, flowed 256 barrels of pipe line oil daily. Tubing pressure was 1300 pounds, and casing pressure was 1600 pounds.

Stanolind Oil & Gas Company's second well at Martha, Liberty County, has cored the sand higher than the discovery well. Seaberg 1, I. & G. N. No. 7 logged oil sands at 8085 to 8092 feet and from 8092 to 8114 feet. Seven-inch casing has been run to bottom for a production test.

On the flank of Esperson field, Liberty County, General Crude Oil Company has completed Fee B-5 for an estimated 25 barrels of pipe line oil per hour from a large sand section, topped around 7430 feet. It is reported that this well logged more sand than any other well in the field. No information has been given out on the test.

The second well to be drilled at South China, Jefferson County, Geo. Echols, Hebert & Smith's Fontenot 2, has been

Texas Gulf Coast Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Anahuac—		
Navarro, Deere 3	386	7160
Clear Lake—		
Humble, Humble-Fee C-11	120	5846
Esperson—		
General Crude, Fee B-5	600	7680
Fairbanks—		
Amerada-Stanolind, Foley 9	130	6848
Stanolind, Schumacher 1	*	7334
Union Prod. Co., Daniel 1	¶67	6810
Friendswood—		
Humble, Owens 3	480	6045
Humble-West Fee B-37	600	6047
League City—		
Phillips, West Prod. Co. 1	256	8697
Pierce Junction—		
J. A. Deering, Herman Hospital 3	33	4882
South China—		
Echols, Hebert & Smith, Fontenot 2	*	7939
Segno—		
Gulf, Wing 21	545	8147
Spurger-Joe's Lake—		
Republic, Fee 22	50	7709
Thompson—		
Gulf, Gubbels X-7	*	3709
West Columbia—		
Texas Co., Abrams 33	504	5223
Withers—		
Texas Co., Broussard 13	108	5546
Texas Co., Pierce Estate B-36	88	5543
Galveston County—		
Sun, State 1-179, East Bay, tract 179	*	8355
Jasper County—		
C. B. Bunte, Cartwright 1, Magnolia Springs area, E. O. Le-Grande sur	*	7759
Jefferson County—		
Magnolia, Phelan 6, nw of Cheek, H. & T. B. No. 1	*	8227
Tyler County—		
J. H. Bonham, Kountz 1, Rockland area, E. Smith sur	*	417

*Failures; †Junked; ¶Million cu. ft. gas.

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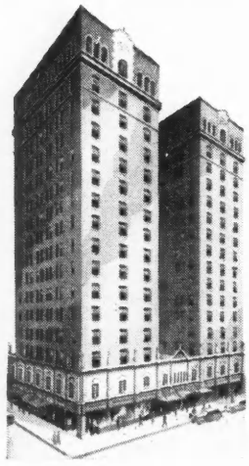

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abandoned at 7939 feet after making tests up the hole which showed oil and salt water. The last test made, in a new sand, from 6689 to 6695 feet, swabbed salt water. Magnolia Petroleum Company's Broussard Trust 1, west offset to the discovery well, was down to 7878 feet in shale with 7-inch casing set at the close of the week. The well is reported to be running considerably higher than the discovery well. It had sands at 7793 to 7808 feet and from 7808 to 7819 feet which might produce oil. An electrical log of the sands showed 4½ ohms and 50 milivolts. A production test will be made the coming week.

Three-fourths mile southeast of production in the Fairbanks field, Harris County, Stanolind Oil & Gas Company has abandoned Schumacher 1, S. Lewis Survey, at 7345 feet. The outpost test logged sand with a cut of oil from 6662 to 6667 feet; salt water sands from 6756 to 6777 feet, 6864 to 6872 feet and from 6908 to 6914 feet. In the northern part of the field, Union Producing Company finally has completed Daniel 1. It flowed an estimated 67,000,000 cubic feet of gas daily, open flow, from sands at 6810 feet.

R. N. Ranger has abandoned Blakley 1 in the Clodine area, Fort Bend County, at 8012 feet. The well had a slight show of oil at 7200 to 7209 feet, but when a drill-stem test was made it showed salt water.

On the northwest flank of the South Houston field, Harris County, Stanolind Oil & Gas Company is trying to get back on bottom in H. Staiti 1, which is bottomed at 9474 feet. This is the deepest well drilled at South Houston field, and logged a sand at 7528 feet that showed gas. Seven-inch casing has been set at 7572 feet. The well was taken over by Stanolind Oil & Gas Company from Commerce Oil Company.

Northwest of North Cheek field, Jefferson County, Magnolia Petroleum Company abandoned J. H. Phelan 6, H. & T. B. No. 1, last week at 8227 feet in salt water sand, topped at 8225 feet. No important showings were logged in the well.

Magnolia Springs prospect in Jasper County received another wildcat failure when C. B. Bunte's Cartwright 1, E. O. LeGrande Survey, was abandoned at 7759 feet. Salt water sands were cored up the hole.

East Bay prospect, Galveston County, received a set back last week when Sun Oil Company abandoned State 1-179 at 8355 feet. An electrical log was run to bottom and no shows of oil were reported.

In the Cedar Bayou area, Chambers County, J. R. Turnbull's Sheppard 1, R. A. Porter Survey, was drilling at 6615 feet in shale after coring a sand with an odor of oil at 6594 to 6600 feet. This wildcat was tested around 6460 feet several weeks ago and showed a scum of oil when swabbed.

In the Lane City area, Wharton County, Humble Oil & Refining Company has announced location for a wildcat, Schwartz 1. It is 2332 feet northwest of the southeast line and 1399 feet northeast of the southwest line of T. M. Blake Survey. Also in Wharton County and north of Louise field, W. Stewart Boyle made location for Britton 1, 330 feet out of the northwest corner of a 100-acre tract in the F. Page No. 8.

Texas drilling permits drop 19 to 158 total

Permits for drilling 158 new wells in Texas were approved last week by the Texas Railroad Commission, 19 less than were allowed the week before.

Five locations were approved in the East Texas field, including 2 in Rusk, 2 in Smith, and 1 in Upshur County. There were 2 locations reported from the remainder of the East Central Texas territory.

West Texas operators listed 21 locations and West Central Texas producers reported 17 permits. In the Gulf Coast district 31 new locations were approved, while Southwest Texas led the state with 47 permits.

North Texas operators were permitted to drill 35 new wells, including 10 in Wichita County. No permits were approved in the Panhandle.

Preliminary work in Alabama Basin area continues active

Jackson, Miss. — Leasing and geophysical activity in the Northwest Alabama Basin, embracing parts of Alabama and northeast Mississippi, continues at a high pitch. Carter Oil Company of Oklahoma has moved a seismograph unit into Monroe County, Mississippi, which is making headquarters at Aberdeen.

In Marion County, Alabama, where Gulf Oil Corporation has a geophysical unit, J. G. Kennedy of Fort Worth, Texas, is taking leases and in the same county, A. P. Leiser and Cecil Gardner are also leasing. Sells Petroleum Company of Longview, Texas, is buying scattered minerals in Monroe and Ittawamba counties, northeast Mississippi, and in Marion County, Alabama. J. L. Shaw of Ada, Oklahoma, has secured several thousand acres in Marion County, Alabama. H. D. Easton, Jr., who has, with his father, H. D. Easton, several large blocks in northwest Alabama, has taken a new block in Franklin County, Alabama. Gordon C. Grasty of Gladewater, Texas, is curing titles to his block in Ittawamba County, Mississippi, preparatory to making location for a test .Joe Modisett is curing titles on a block he has in Clarke County, east central Mississippi, which was recently worked by a geophysical unit.

Gulf Refining Company has transferred its geophysical unit that was working Cat Island in Mississippi Sound off the coast of Harrison County, Mississippi, to Horn Island, also in the sound off the coast of Jackson County.

Barnsdall Oil Company has had a geophysical unit working recently in Adams County, Mississippi, in Townships 4 and 5 north, Ranges 3 and 4 west. Gulf Refining Company has had a unit in Winston County, central Mississippi, working in the southwestern part of the county. Louisiana Crusader Oil Company has had a unit in Wilkinson County, in Townships 3 and 4 north, Ranges 1 east and 1 west. In the same county, Sun Oil Company has a unit working in Township 1 north, Ranges 11 and 12 east.

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South Louisiana

LaFourche Crossing wildcat indicates possible oil field.
New sand cored in deep hole in Golden Meadows field.

Lake Charles.—Lafourche Crossing prospect in Lafourche Parish, will be tested the coming week and it may be converted into an oil field. J. P. Scranton's Martinez 2 is bottomed at 10,515 feet and liner has been set onto the seven-inch casing at 9000 feet and cemented at bottom. It will be perforated at 10,127 to 10,132 feet where a showing was encountered while drilling. Other shows of oil and gas have been logged up the hole.

Tide Water Associated Oil Company has opened another new producing horizon for Venice dome, Plaquemines Parish. The operator's Manhatten Fruit Company 10 was completed when casing was perforated with 173 shots from 7475 to 7505 feet. It came in flowing 11 barrels of 32.5-gravity oil per hour through a ⅛-inch choke with a tubing pressure of 1300 pounds. The operators recently discovered a new sand at 7900 feet.

On the Unknown Pass prospect in Orleans Parish, W. T. Burton was preparing to reperforate L. & N. 1 after setting cement retainer at 10,150 feet. Last week the wildcat was swabbed and showed a little oil and gas. No estimate was made on the amount of oil or gas. Burton's De Montloutezin in the Lake Pontchartrain area was abandoned at 10,425 feet. No shows of oil were reported.

Approximately ¾ mile northwest of the discovery well at DeLarge, Terrebonne Parish, Fohs Oil Company's Buckley-Mahler 1 was down to 13,270 feet in sand at the end of the week and tests were being made. This is the second 13,000-foot well drilled at DeLarge.

On the flank of Section 28 salt dome in St. Martin Parish, William Helis has made location for Levert 1, 1650 feet south and 490 feet east of the NWc SW 33-9s-7e.

Golden Meadows, Lafourche Parish, which has looked disappointing in the past, is taking on the appearance of a major oil field. Last week The Texas Company's LaTerre Land Company logged 10 feet of sand showing oil from 10,031 to 10,041 feet, and was coring ahead. This is a new sand for the field. Mar Tex Oil Company has completed Rebstack Community 1 after casing was perforated with 40 shots from 5309 to 5317 feet. The well flowed 18 barrels per hour through a 12/64-inch choke. The Texas Company completed L. L. E. Golden Meadows 2 at 7930 to 7950 feet, flowing 577 barrels of 37.6-gravity oil daily through ¼-inch choke with a tubing pressure of 900 pounds. The operator's Falgout Holding Company 1 cored the above sand from 7930 to 7934 feet and was drilling ahead at the end of the week.

East of production at North Tepetate, Acadia Parish, Atlantic Refining Company is attempting to open a new producing horizon in Klumpp 5. Last week the well was perforated with 39 shots from 9040 to 9046 feet and a drill-stem test was attempted. Operators are now running screen for a production test. The well showed gas in this horizon when it was cored.

In Calcasieu Parish, Toomy area, C. L. Arnett et al has announced location for A. Welsh 1, C SE NW 19-10s-12w.

Northwest of production at Eola, Avoyelles Parish, Sid Richardson's Sam Haas 1 flowed 276 barrels of pipe line oil daily through a 10/64-inch choke with a tubing pressure of 1000 pounds. Casing was perforated with 41 shots from 8546 to 8556 feet; it had drilled to 8813 and plugged back.

Magnolia Petroleum Company's third well at West Gueydan, Ferguson 3, Vermilion Parish, has cored the sand found in Ferguson 2. The sand was cored at 6680 to 6688 feet and from 6856 to 6859 feet. The hole is down to 6996 feet at the end of the week.

At Lake Hermitage, Plaquemines Parish, Gulf Refining Company and Humble Oil & Refining Company's Lafourche Levee District 10 was tested in a new sand last week and salt water was recovered. The operators made a nine-minute drill-stem test from 7022 to 7027 feet.

South Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Baton Rouge—		
Lisbon-Iberia, Grubb 1	720	6508
Charenton—		
DeArman, Kern 1	200	1106
Knisley Pet. Co., Hertel 1-B	210	1150
St. Mary, Achee 1	213	1124
Eola—		
Sid Richardson, Haas 1	276	8556
Golden Meadows—		
Mar Tex, Rebstack Community 1	432	5317
Texas Co., LLE Golden Meadows 2	577	7950
Lake Pelto—		
Texas Co., State 26	329	5050
Starks—		
Skelly, Industrial Lbr. Co. 1	*	5350
Vencie—		
Tide Water Manhatten Fruit 10	264	7505
Villa Platte—		
Continental, B. G. Fontenot 1	408	9067
Orleans Parish—		
W. T. Burton, De Monloutezin 3-B, Lake Ponchartrain area	*	10,425
West Feliciana Parish—		
Donkin & Smity, Montgomery, Weynoke area	*	8505

*Failures; †Junked; ¶Million cu. ft. gas.

Arkansas permits

El Dorado, Ark.—Only one drilling permit was issued last week by the Arkansas Oil and Gas Commission, as follows: Nevada County—Benedum & Trees Oil Company, W. R. Mitchell 1, located 330 feet from south line and 990 feet from east line 4-14-20.

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North Louisiana Fields

Wells completed at two levels in Cotton Valley field. Shongaloo recompletion makes 131 barrels in 24 hours.

Shreveport. — The twentieth lower Marine oil well for the Cotton Valley field, Webster Parish, was completed last week in Oliphant Oil Corporation's Hodges A-2, NE NE 3-20n-10w, on the south flank of the structure, flowing 37 barrels of oil per hour from the "D" sand. Total depth is 8568 feet. Production was through ¼-inch tubing choke with casing pressure 1400 pounds, and tubing, 1300 pounds.

The thirty-ninth Holloway (Travis Peak) oil well for the same field was completed in Hassie Hunt's R. M. Coyle 1, NE SE 22-21n-10w, which gauged 143 barrels in 24 hours. Total depth is 5982 feet. A lower Marine gas-distillate well was also completed in the same field.

Magnolia Petroleum Company recompleted Roseberry Unit 1, C SE 29-23n-9w, Webster Parish, Shongaloo district, at 9182 feet, which flowed 131 barrels of oil in 24 hours.

A new wildcat test for Bossier Parish was spudded at Longwood Oil & Gas Company's Belcher & Vaughn 1, located 3306 feet west and 1980 feet south NEc 28-20n-12w. The test is planned for 6000 feet and is a geophysical prospect. F. W. Martin & Company has drilling contract. L. I. Davis and associates moved location and have derrick up for a wildcat test in Caddo Parish, amended location being J. C. Williams 1, NW NW 14-15n-15w, ¾-mile southeast of a small gas-distillate well completed by Joe Hunter and associates in July, 1937.

Lisbon Exploration Company's Roberta Vaughn 1, Section 36-21n-5w, Claiborne Parish, Lisbon district, recemented casing closer to top after making hole to 5343 feet in a deepening operation to 8500 feet in the lower Marine.

One mile west of production in the Lake Bisteneau field, Bienville Parish, Union Producing Company's Lincoln Land Company 1, C W½ 17-16n-10w, cored at 5506 feet and one mile northeast of production at Bear Creek, Bienville Parish, Hunt Oil Company's Southern Advance Company 1, located 300 feet east of C 36-17n-6w, drilled at 7047 feet. Magnolia Petro'eum Company's deep test in the shallow Pine Island field, Caddo Parish, Dillon Heirs 131, C SE NE 14-21n-15w, drilled below 6950 feet, after having missed the Cotton Valley lower Marine series above 6500 feet.

Hunt Oil Company Thursday abandoned its eighth shallow wildcat on its Louisiana Central Lumber Company holdings in LaSalle Parish, Louisiana Central 8, 1180 feet east of west line and 1120 feet south of north line 19-11n-4e, as a dry hole at 2047 feet. Critchett & Woods are rigging to deepen to 5000 feet Kyle 1, C SW NE 18-11n-3e, Caldwell Parish. Present depth is 3004 feet. In the same parish, Arkansas Fuel Oil Company's geophysical wildcat prospect, Louisiana Central 1, Section 31-12n-3e, drilled at 3283 feet. It is planned as an 8000-foot test. Gulf Refining Company set 117 feet of 16-inch surface casing at Hodges 20, 3131 feet north and 1388 feet west SEc 24-16n-12w, Bossier Parish, deep test in the shal'ow Elm Grove field. Prairie River Syndicate's Hutchinson 2, NE NE 3-15n-12w, deep wildcat test in Caddo Parish on the southwest flank of Elm Grove, drilled at 4003 feet.

Fifty-seven drilling permits were issued last week by the Louisiana Conservation Commission of which 23 were in North Louisiana divided among the following parishes: Bossier 3, Caddo 6, Claiborne 1, Franklin 1, Grant 1, LaSalle 3, Morehouse 1, Sabine 1, Union 4, and Webster 2.

The 34 in South Louisiana were in the following parishes: Acadia 1, Avoyelles 2, Beauregard 1, East Baton Rouge 6, Cameron 3, Evangeline 5, Iberia 2, Jefferson Davis 1, Jefferson 3, Livingston 1, Plaquemines 2, La Fourche 1, St. Landry 1, St. Mary 3, Terrebonne 1, and Vermilion 2.

North Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Webster Parish (Cotton Valley)—		
Hassie Hunt, Coyle 1, 32-21n-10w	143	5982
Hunt Oil Co., Coffee 1, 19-21n-9w	432	8367
Oliphant Oil Co., Hodges A-2, 3-20n-10w	900	8568
Webster Parish (Shongaloo)—		
Magnolia, Roseberry Unit 1 29-23n-9w (wo)	131	9151
Sabine Parish (Blue Lake)—		
J. G. Sutton Oil Co., Bowman-Hicks 4, 24-7n-14w	*	4162

*Failures; †Junked; ¶Million cu. ft. gas.

Arkansas Fields

Buckner production is extended one mile east

El Dorado, Ark.—A one-mile east extension of the Buckner field, Columbia County, that produces oil from the Smackover lime, appeared assured last week at Standard Oil Company of Louisiana's Nancy Johnson 1, SW SE 9-16-22. The test topped the porous lime at 7248 feet and has run 6-inch casing to bottom at 7272 feet. The Buckner field opened in November, 1937, has 14 oil wells, all owned by Standard Oil Company of Louisiana.

Atlantic Refining Company's Pine Woods Lumber Company 1, NE NE 16-18-22, Columbia County geophysical wildcat prospect, waited on cement after 5½-inch casing was run to bottom at 9002 feet. With elevation of 220 feet, Smackover lime was topped at 8814 feet and several sections of porosity were logged in the lime, which will be tested starting with the shallowest

What is an Old Timer?

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zones. Electrical log was run before casing was set.

Five wells were completed during the week in the Magnolia field, Columbia County, Arkansas' most active district. East Texas Refining Company and Erwin & Leach completed Buchanan Estate 1, NE NW 19-16-23, LaFayette County, as the eighth oil well in the Stamps-Lewisville field but it was flowing ungauged through 3/16-inch choke for an estimated production of 100 barrels daily. Two standardized wells, not yet officially gauged, are included in the 8 producers. The same operators, who own all the wells in the field made one new location during the week, McGee 1, NE NE 23-16-24, offsetting a producer.

Lion Oil Refining Company's Hill 1, Section 6-18-13, Union County, set 5½-inch casing to test a showing, with total depth of 4601 feet. The same company's Annie 1, Section 29-15-17, Ouachita County wildcat, drilled at 4694 feet. Joe Modisett's Union Sawmill 3, Section 13-18-12, Smackover lime wildcat drilled in the Travis Peak horizon at 3560 feet.

Benavides hearing is postponed

The Texas Railroad Commission has postponed indefinitely its hearing on the Benavides field, which was set for August 24. Gas/oil ratios in the field are to be considered.

Arkansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Magnolia)—		
Arkansas Fuel Oil Co., Glasgow 1, 24-17-20	720	7671
Placid Oil Co., Couch 2, 19-17-19	600	7543
Shell, Garrett 2	960	7626
Southwood Oil Co., Johnson A-1, 22-17-20	408	7500
Standard, Foster 1, 19-17-19	480	7594
La Fayette County (Stamps-Lewisville)—		
East Texas Ref. Co. et al, Bodcaw 1, 19-16-23	75	3424
Warren A-2, 24-16-24	80	3500
Union County (Smackover)—		
S. S. Alexander, Pickering 1, 31-16-15	*	3150

*Failures; †Junked; ¶Million cu. ft. gas.

New Mexico Fields

Lovington west outpost shows encouragement for production.

Drilling remains near normal level during output holiday.

Hobbs, N. M.—Expansion of the Lovington pool, Lea County, to the west appeared promising when an outpost logged favorable saturation in the regular Permian, but a southeast edge test encountered water after drilling a comparatively thin pay section. Production spread to the west was indicated after L. H. Wentz et al's State 1-A, C SW SW 36-16s-36e, topped first oil saturation at 4665 feet, with an elevation of 3849 feet, and found broken pay at intervals in coring to 4797 feet. It is scheduled to penetrate the lower horizon before attempting a production test. An oil producer situated ⅝ mile to the southeast flowed natural from broken pay at 4622-4938 feet, with an elevation of 3840 feet.

Coastal Development Company's Caylor 1, NW NW SE 6-17s-37e, ½ mile southeast of the most easterly production, reached bottom-hole water in drilling to 5005 feet, or 1191 feet sub sea. The well swabbed 20 barrels of fluid hourly, estimated 50 percent oil, at this depth, then plugged back to 4785 feet to try for a completion. Magnolia Petroleum Company's State 2-Q, C SE NE 36-16s-36e, is the first prospective oil producer in the area to use nitro in boosting its output. This well failed to flow when given an extended swabbing test at 5100 feet, or 1257 feet sub sea. It was shot with 500 quarts at 4900-5100 feet, and production test was delayed to remove cavings.

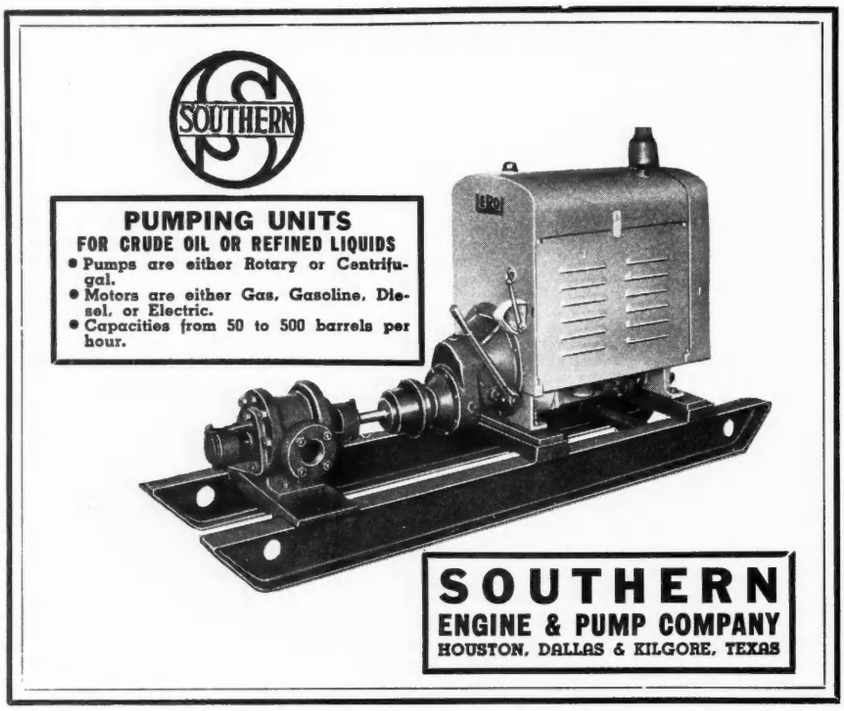
Six Lea County fields were assigned a total of 8 new operations the past week, as compared to 7 tests the previous week. Drilling activity is being maintained at near normal level in the face of the enforced production holiday. However, new projects will be held to a minimum until the production ban is lifted. Exemptions from the production holiday, slated to extend from August 17 to 7 a. m. September 1, are confined to comparatively few wells that yield a large percentage of water in the Cooper, Hobbs, Eaves and Jal fields. A large portion of this exempted oil is being stored on the lease by operators, and it is to be charged back against future allowables, according to a ruling by the New Mexico Oil Conservation Commission.

The Loco Hills field, Eddy County, contributed 4 of the 5 new tests reported for the county the past week. The area has a number of wells in process of completion, but the shutdown order will cause potential gauges to be delayed indefinitely. Continental Oil Company and S. P. Yates' Travis 1, SE SE SE 3-18s-29e, southeast of the original pool, failed to find a lower pay in drilling to 3002 feet in white lime. A string of 5½-inch pipe landed at 2685 feet has been pulled to shoot small show passed up in the 2600-foot zone. Underwood & Sanders' Langford 2, NW SE SW 9-18s-29e, flowed 450 barrels oil in 12 hours through casing after 180-quart nitro shot at 2450-89

New Mexico Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Chaves County—		
Comanche Drl. Co., Campbell 1, ne ne nw 15-11s-26e	7	1343
New-Russell & Wood, Sterrett 1, nw se nw 29-11s-25e	10	1018
Eddy County—		
Franklin Pet. Co., Ballard 2-A, nw nw se 1-18s-29e	285	2760
Me-Tex Supply Co. et al, Yates 2, c ne se 5-18s-29e	†	565
Newberry et al, Saunders 2, ne se se 13-17s-27e	240	550
Yates et al, Saunders 1, ne ne ne 12-18s-29e	50	3200
Lea County (Hardy)—		
Stanolind, Hill 5-C, lot 10, 5-21s-37e	79	3775
Lea County (Mattix)—		
Anderson-Prichard, Blinebry-Texaco 2, c se sw 29-23s-37e	60	3589
Weier Drl. Co., Woolworth 4, se nw sw 28-24s-37e	54	3572
Lea County (Skelly)—		
Skelly, King 2-A, c nw sw 33-22s-37e	515	3689
Lea County (Vacuum)—		
Ohio, State-Staplin 1, acct. 2, c se nw 19-17s-35e	192	4700
Phillips, State-Santa Fe 30, c sw nw 26-17s-35e	650	4575
Standard of Texas, State 4, lse 5, c ne nw 27-17s-35e	100	4635
Lea County (Wildcat)—		
English et al, Miller 1, c ne se 18-19s-32e	*	4016

*Failures; †Junked; ¶Million cu. ft. gas.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feet. Tubing has been run for potential gauge.

The sandy-lime belt in eastern Lea County was the largest contributor of new activity. In the Mattix field, Culbertson & Irwin, Inc.'s Martin 2, SE NE NE 31-24s-37e, west edge project, was drilling at 1200 feet. Humble Oil & Refining Company's Williams 6, C NE NW 34-24s-37e, was rigging up. Continental Oil Company's Jack 6-A-20, C SW SE 20-24s-37e, reported last week as showing for a big oil and gas producer on preliminary test at 3501 feet, was deepened to 3593 feet. Tubing packer landed at 3477 feet lowered the gas volume to 4,580,000 feet daily, but also cut the oil yield to a small spray. Packer will be reset. Anderson-Prichard Oil Corporation's Blinebry-Texaco 2, C SE SW 29-23s-37e, near northwest edge of the Mattix field, but classified as the Skelly pool for proration purposes, also experienced an excessive volume of gas. It was completed at 3589 feet, flowing 2½ barrels of oil hourly natural, with gas/oil ratio reduced to 1600 feet per barrel after installing packer. In the Langlie field, Anderson-Prichard Oil Corporation's Stuart 4, C NE NW 11-25s-37e, is a new test for the extreme east edge.

The linking of the Penrose field with the prolific lime pool situated between the former and the Eunice district is to be sought by N. G. Penrose and Rowan-Nichols Oil Company's Mattern 1, SW NW SW 7-22s-37e, Danglade & Clower's Glier 2-B, NE NE NW 33-22s-37e, near the intersection of the Penrose and Skelly areas, has moved in machine.

The 2 oldest producing areas in Lea County shared in the new activity. In the Maljamar field, Ross Sears et al's Miller 1, C NW NW 26-17s-32e, offsets production on the southeast edge, and has moved in cable tools. Paul Love et al's Pearsall 3, C NW NW 33-17s-32e, south outpost, is rated good for 250 barrels daily after 450-quart nitro shot at 3820-3915 feet. It was plugged back from salt water at 4280-83 feet to 3938 feet. Electrical formation survey established oil saturation at 3820-3925 feet, with an elevation of 3927 feet. In the Rhodes oil and gas area, Stanolind Oil & Gas Company has authorized the drilling of Farnsworth 1-C, NW SE SW 4-26s-37e, primarily for sweet gas production.

Republic Production Company's State 3, C NE SW 32-17s-35e, was rigging up rotary to give the Vacuum field its only new operation.

In Chaves County, Western Minerals Corporation's Dow 1, C SW NW 27-10s-30e, is awaiting orders at 3597 feet in brown lime after encountering a small amount of water. Oil-saturated lime at 3592-94 feet tested ¼-bailer of heavy oil and salt water daily. This wildcat logged top of lime at 2870 feet, with an elevation of 4086 feet. Nay Hightower et al's Billingslea 1, C SW NE 28-11s-30e, has not qualified as a commercial pumper although it is removing cavings after swabbing 40 barrels of oil and 6 barrels of water daily. The hole was plugged back from 3461 feet to 3451 feet for 400-quart nitro shot last July.

California Fields

New Kern County field opened with 1000 barrels initial. East Coalinga extension well trying to lessen gas ratio.

Los Angeles. — Western Gulf Oil Company has discovered a new field in Kern County through completion of KCL-Panhandle 1, Section 3-32-26, which swabbed in for 1000 barrels of 50-gravity oil with 10 million cubic feet of gas from 10,178 feet. It had taken in approximately 125 feet of the Stevens zone in which it is bottomed, and may drill deeper into the sand. Location is 10 miles southeast of Ten Sections and 6 miles southeast of Coles Levee.

In the Fruitvale field, Meridian Petroleum Corporation's Fee 2, NE 23-29-27, reports coring 65 feet of Vedder formation in going to 7665 feet, and 7-inch casing has been set at 7500 feet for a production test. Company officials are of the opinion that drilling in the Fairhaven portion of the field has not been deep enough, and should this well prove productive commercially it will affect a large area that now is producing from shallower depths.

Based on performance of Bandini Petroleum Corporation's No. 48-18, Section 18-19-16, Fresno County, an extension has been developed to East Coalinga Eocene pool. The well was brought in flowing through a formation tester for an initial yield of 750 barrels of 51.2-gravity oil per day from 8093 feet. Top of the Gatchell sand was at 7986 feet, the base being established at 8061 feet. The operators will run a blank liner to shut off the upper 55 feet of zone to get a better gas/oil ratio.

Superior Oil Company brought in Hight 2 at East Coalinga Eocene for 3200 barrels of 28-gravity oil per day from 8300 feet. This well is situated on the east edge of Coalinga's Gatchell pool and came in under restricted flow.

Meridan Petroleum Corporation's Fee 2, Section 23-29-27, a deep test north of Fruitvale, is coring below 7600 feet in Jewett shale and is expected to pick up the Vedder.

Standard Oil Company's KCL 21-1, Section 19-30-25 in the western area of Elk Hills-Coles Levee reached a bottom of 9977 feet, plugged back to 9880 feet and after swabbing still fails to show results with fluid level reported at 6000 feet. Richfield Oil Corporation's Western A-12-33, secured a water shutoff with 8⅝-inch at 8443 feet and resumed coring below 8900

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feet in shale and oil sand. It is slated for completion from the Stevens zone.

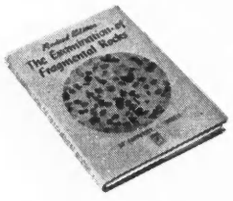
With the number of strings increased to more than 60 in the West Montebello extension, a number of interesting completions are slated for this Los Angeles Basin field within the next week. Wood-Callahan Oil Company will probably bring in Todd 1, which is being drilled under an operating arrangement for British-American Oil Company. It is bottomed below 7600 feet and will test the same productive zone found in the operator's Bartlett 1. The company is preparing to spud Thill 1 as an offset to the Bartlett well. Union Oil Company has completed La Merced 33 in the western portion of the field for an initial yield of 525 barrels daily from 7640 feet, and Fullerton Oil Company's Scott-Arnold 1 which bottomed at 7657 feet was turned into the tanks last week for 1840 barrels daily. Fullerton's Trustee 1 after being plugged back to 7605 feet gauged 810 barrels of 35 gravity oil per day. The operator has completed site for Scott-Arnold 2. Standard Oil Company's Whitehead 7 after drilling shale and oil sand to 7680 feet ran electric logging device and plugged back to 7512 feet.

The attempt on the part of The Texas Company to develop wildcat production close in to the Playa del Rey pool has failed through the abandonment of the operator's Inglewood Extension 1, Section 34-2-15. It bottomed in Schist at 6672 feet. Top of the Nodular was found at 6550 feet and the conglomerate at 6625 feet. During a formation test of the interval at bottom a small amount of oil was reported. Vulcan Oil Company's Del Rey 1 wildcat in Section 22-2-15, is below 2210 feet in sand and shale and will make a deep test.

California Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Orange County (Huntington Beach)—		
Southwest Explor. Co., State 17	434	5440
Los Angeles County (Montebello West)—		
Beverly Montebello, Beverly 2	614	7651
British-American, Oswald 1	1120	7643
Fullerton, Fullerton-Trustee 1	736	7660
Standard, Braun 3	600	7625
Union, La Merced 33	500	7640
Los Angeles County (Wilmington)—		
Signal, Signal-UP (LB) D-4	450	4050
Termo Co., No. D-6 (LB)	500	3920
Union Pacific, UP (LB) 112	533	3988
Kern County (Belridge)—		
Belridge Oil Co., No. 17	845	8670
Kern County (Canal)—		
Shell, KCL A-4-14	1465	8304
Kern County (Coles Levee)—		
Union, KCL 52-11, c	1080	9947
Fresno County (East Coalinga Eocene)—		
Superior, Hight 2	3198	8300
Fresno County (Kettleman No. Dome)—		
K. N. D. A., No. 61-34J	176	8900
Standard, No. 87-17Q	2865	7930
Kern County (Mountain View-South)—		
Standard, Jewett 2-3	1996	6155
Kern County (Round Mountain)—		
Marcan Oil, No. 4	130	1808
D. G. Vedder, Bell 7	285	1865
Kern County (Fruitvale)—		
Western Gulf, Ansolabehere 2	*	2879
Kern County (Mountain View-South)—		
Standard, Tupman 1	*	7085
Fresno County (Coalinga-Northern Area)—		
Texas Company, Loescher 1	*	9613

*Failures; †Junked; ¶Million cu. ft. gas.



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Michigan Fields

Kent County well out in front in development work

Mt. Pleasant, Mich.—With 46 active locations, 30 probable new locations by month end, and 15 wildcat and semi-wildcats drilling, Kent County now is well out in front for active areas in Michigan. Development has slowed down in both Allegan and Van Buren Counties, the two other proven shallow-field counties of the state, and Ottawa County, which adjoins Kent on the west, has not reached any big-scale drilling yet, although production has been established.

Only 15 locations are active in Clare County and 4 in Isabella County, Michigan's only two active Basin fields at the present.

Leasing, on the other hand, is now well ahead of the play with particular activity in Barry, Kalamazoo and St. Joseph Counties, where operators have been blocking up spreads ranging from as little as 200 to as much as 50,000 acres.

September 6 the State Lands Division of the Conservation Department will place over 16,000 acres of state-owned wildcat leases on the auction block in Northern Michigan. It will be the first big wildcat sale conducted by the state since spring, and as acreage usually is only put on for sale after one or more companies have requested it, the sale points to a revival of interest for drilling in the north.

One wildcat test, Chapman Oil Company's DeKleine 1, Section 25-5n-14w, Zeeland Township, Ottawa County, showed promise this week of opening a new play in Southwestern Michigan. Test topped Traverse at 1660 feet and had 600 feet of oil at 1667 feet, where drilling was suspended to run tubing and acidize. Test is a half mile northwest of a wildcat drilled last summer which produced from 3 to 6 barrels a day from the Traverse over a 3-months test period and then was finally abandoned as non-commercial with water flooding the pay.

The Walker field, Kent County, was definitely extended west a half mile into Tallmade Township, Ottawa County, by two wells, a half mile apart, north-south. Best of the two, E. B. Strom's Brenner 1, Section 25-7n-13w, flowed 10 barrels an hour after acid from Traverse for an estimated daily potential of 200 barrels.

Meanwhile, W. R. Boroughs, Inc.'s Walch 1, 18-15n-6w, Mecosta County wildcat, which swabbed free oil from Traverse lime at 3450 feet is now being deepened to the original obective zone, Dundee, after a tubing pump test failed to establish commercial production.

Michigan Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
Shimmel, Trustee, Lloyd 1, ne ne nw 21-3n-15w	*	1414
Socony Vacuum, Norgarrad 4, nw nw sw 2-4n-13w	125	1659
Marulick 2, ne ne se 15-4n-13w	165	1595
Voorhees Dr. Co., Loew 1, se se sw 3-4n-13w	200	1627
Branch County—		
LaBlanc et al, Haven 1, se sw ne 20-5s-6w	*	1257
Gladwin County—		
J. V. Wicklund, Lennon 1, c s½ ne sw 12-19n-1w	*	3552
Isabella County—		
Rowmor Corp., Grass Lake Bank 1, nw ne sw 28-16n-3w	267	3705
Cities Service, Ramey 1, nw sw nw 28-16n-3w	190	2706
Kalamazoo County—		
Turner Pet. Corp., Andrews 1, nw nw sw 31-4s-12w	*	1160
Kent County—		
Fisher & McCall, Droste 1, c s s se ne 30-7n-12w	*	1990
C. E. Weller, McKay 1, c w sw se 30-7n-12w	500	1865
American Dr. Co., Axdorff 1, nw se se 30-7n-12w	600	1880
Giddis 1, sw se se 30-7n-12w	325	1877
Gordon & Bolgers, Kooyers 1, nw nw ne 31-7n-12w	150	1869
Ide & Glavin, Burgess 1, se sw ne 32-7n-12w	90	1970
Wolverine Nat. Gas, Yost 1, ne sw se 32-7n-12w	88	1842
Gordon Oil Co., U. S. Gypsum 1, se nw nw 3-6n-12w	50	1782
Crown Dev. Co., Cole 1, nw ne ne 31-6n-12w	*	2004
Midland County—		
Chapman & Rowmors, Bagley 1, sw sw 10-16n-1w	*	4007
Missaukee County—		
C. W. Teater, Currie 1, ne sw nw 29-23n-5w	*	1051
Ottawa County—		
E. B. Strom, Brenner 1, c e ne se 25-7n-13w	200	1883
Fisher & McCall, Goodale 1, se se se 25-7n-13w	90	1863
Van Buren County—		
Clark & Johnson, Maier 6, nw sw se 14-1s-14w	*	1314
J. H. Cooper, Harpham 3, se ne nw 16-1s-14w	*	1267
Joe Van Anam, Eastman 2, nw nw ne 13-1s-15w	190	1203
Roy Gregg, Sackett 1, sw ne ne 17-1s-13w	*	1417

*Failures; †Junked; ¶Million cu. ft. gas.

Rocky Mountain Fields

Three scattered deep wildcat projects get underway.

Recompletion in Wertz field gets flow of 4622 barrels.

Casper, Wyo.—Wildcatting in the Rocky Mountain division took a spurt with three widely scattered deep tests under way, while good showings were encountered in two tests.

State Royalty Petroleum Company of Camp Crook, South Dakota, has let contract to Manning & Martin, Inc., for an 8000-foot test of the Camp Crook structure. Contractor is moving in heavy rotary for State 1-Unit-3, CSW NE 35-18n-1e, Harding County, South Dakota.

The Camp Crook structure is a parallel line of folding to the 60-mile Baker-Glendive anticline extending through Fallon County, eastern Montana, into Harding County, South Dakota. State Royalty Petroleum Company has a 30,000-acre block covering the structure, which has been divided into four unitized areas for co-operative development. The wildcat will mark the first deep and significant test in South Dakota. The Camp Crook structure was thoroughly seismographed indicating structure and closure.

The 13⅜-inch casing will be set at around 1000 feet and Madison lime is expected around 600 feet higher than encountered at 6747-6797 feet in Montana Dakota Utilities Company's deep well on Little Beaver Dome, a superimposed high on Baker-Glendive, Fallon County, Montana. The deep Montana Dakota test drilled in 1937 had a 35-barrel-hourly showing of fluid, 65 percent water.

Colorado

On the Eldorado structure in Boulder County, Colorado, Continental Oil Company is moving in for Borra 1, SE NE SW 5-1s-69w. This test will be carried to the Hygiene sandstone. If this is found in place and suggesting favorable sub-surface structure, the hole wil be carried to the Dakota. The Eldorado structure is 8 miles south of old Boulder field, still producing oil, and 5 miles west and a mile north of Repollo Oil Company's Denie 1, NE 33-1n-70w, which is producing gas from the Hygiene at 3400 feet.

South Park Oil Company's Lemarr 1, NE NE SE 34-11s-75w, South Hartsel Dome, Park County, Colorado, had 200 feet of 40-gravity black oil at 6979 feet after setting 4⅞-inch casing at 6977 feet and drilling 2 feet deeper. No oil was showing before casing was set and the oil came in after drilling by casing point. Oil is coming, according to C. E. Shoenfelt, geologist for the company, from a sandy shale in the Apache Creek formation. Shoenfelt places the bottom of the hole about 60 feet from the massive sandstone forming the base of the Apache.

Seven miles northeast of Casper, Continental Oil Company spudded McGrath 1, CNW SW 15-34n-78w, North Geary Dome, Natrona County, set 20 feet of 20-inch conductor pipe, and is drilling below 300 feet. The structure embraces 7500 acres, and seismic survey shows a minimum closure of 800 feet.

Completing in New Hole

Six miles to the northeast of North Geary, General Petroleum Corporation is again at critical depth redrilling into the pay horizons in its discovery well on the Cole Creek structure, Natrona and Converse counties, Wyoming. Government 1, NW NW SE 21-35n-77w, is drilling-out plug with the 6⅝-inch production string rerun and set on top of the Dakota series at 7910 feet. The well in June, 1938, completed for 250 barrels daily from the Lakota at 7974-8013 feet with hole bottomed in the Morrison formation at 8020 feet. The company then drilled a mile north on state land, went to 8706 feet, stopping in the Sundance and finding all producing formations to that depth carrying water. However, the character of the Sundance was such as to encourage deepening Government 1, which was carried to 8511 feet through the Sundance which showed water. Hole was then cemented back through the Lakota and into the 6⅝-inch casing set on top the Lakota. The 6⅝-inch was perforated in the Dakota at 7912-30 feet and showed for 100 barrels daily. This was then cemented off and the Muddy at 7760 feet and Mowry at 7600 feet were both up-stage tested, and cemented off after showing oil. Tubing was inavertently cemented in hole, and after several weeks of fishing, operators set whipstock at 6840 feet and drilled new hole for recompletion in the Dakota-Lakota sands, with plans to produce simultaneously.

A test projected for the Kootenai and Ellis-Madison horizons, Tarrant-Kirk's Hoeschen 1, CNE SE 34-27n-5w, West Pondera structure, Pondera County, Montana, encountered a 2,600,000 cubic foot flow of gas in the Basal Colorado at 1560-1640 feet.

Final completion figures on Sinclair Wyoming Oil Company's Wertz 11, SE NW NW 7-26n-89w, record Wertz field production and one of the largest wells in southern Wyoming, are 4622 barrels daily through the casing with total depth at 6238 feet. Completed in Tensleep originally in 1937 at 5987 feet, the hole still bottoms in that sand. Prior to deepening, the well had been making around 100 barrels of Tensleep oil from the upper benches having originally completed for 250 barrels daily. Success of deepening the well has lead the company to decide on deeping four other Tensleep wells in the Wertz field. Gravity of the oil is 35 degrees and sulphur content is 1.4 percent, exceptionally low for Tensleep oil.

Following gas completion of C. C. Clark 1, in the North Baxter Basin gas field, Sweetwater County, southwestern Wyoming, Mountain Fuel Supply Company is rigging up rotary equipment for G. Howard Mosey 1, NW NW NW 18-18n-104w, in the Middle Baxter Basin field. The company is testing and exploring outer limits of the fields to build up its gas reserves for its Salt Lake City, eastern Utah and southwestern Wyoming franchises.

A new entrant to Montana is Italo Petroleum Corporation, which recently acquired a 3000-acre block from W. M. Fulton, pioneer Montana oil operator. The block is located on a nose of the North Cut Bank shoreline structure and is five miles south of the Red Coulee-Border field. The company is moving in drilling machine for Elmer Cornett 1, SW NW 30-37n-3w, which marks a northwest extension test to the Cut Bank field.

Mountain States Completions

NEW MEXICO

Company, Well and Location	Init. Prod. Bbls.	Depth
San Juan County (Rattlesnake)—		
Continental Oil Co., Tribal 94, sw nw se 2-29n-19w	xx	854
WYOMING		
Fremont County (Shoshoni)—		
Hall & Olliger, Government 5, nw ne 33-38n-95w	*	1000
Niobrara County (Lance Creek)—		
Argo Oil Corp., US-40 1, nw nw sw 8-35n-65w	2400	5585
Ohio Oil Co., Lamb 12, Account 2, nw sw sw 5-35n-65w	1459	5522
Sublette County (LaBarge)—		
Texas Co., State 6-K, se sw 34-27n-113w	30	810
Sweetwater County (North Baxter)—		
Mountain Fuel Supply Co., Clark 1, nw nw 12-19n-104w	¶2½	3392
Weston County (Pump Creek)—		
John Brorby's George 1, sw se nw 26-48n-64w	*	2462

xxWater for lease purposes.
*abandoned.
¶ Million cubic feet of gas.

Oklahoma gas utilities association program arranged

Gas Division of the Oklahoma Utilities Association will hold its annual meeting in Biltmore Hotel, Oklahoma City, September 14, 1939.

Registration begins at 9 o'clock followed by a talk on "Duties of a District Manager," by L. D. Black, Lone Star Gas Company, Ennis, Texas. Also included in the morning session will be a discussion of how "Dealers Aid in Promoting Gas Sales," by F. M. Rosenkrans, Gas Service Company, Kansas City, Missouri, and "Application of Temperature and Velocity Boosters," by E. C. McAnich, chemist, Oklahoma Natural Gas Company, Tulsa.

W. L. Woodward, president of Zenith Gas System, Alva, Oklahoma, will preside at the session.

Afternoon session beginning at 2 o'clock consists of three papers tentatively scheduled, each followed by discussions. Carl Dean, Oklahoma Natural Gas Company, Tulsa, will talk on "High Bill Complaints." E. A. Bartolina, Consolidated Gas Utilities Corporation, Blackwell, will discuss "Servicing Appliances" and a talk on "Air-Conditioning," by Don Mayne, Air-Conditioning Division, Williams-Oil-O-Matic Heating Corporation, Bloomington, Illinois.

Kate A. Niblack, secretary, Oklahoma Utilities Association, reports a large attendance of gas men is expected at this meeting.

WILDCAT REPORT
New Starts and Completions

STATE	WILDCATS STARTED		WILDCAT TESTS COMPLETED							
			Total		Oil		Gas		Dry	
	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year
Alabama	...	4	...	2	...	...	...	...	...	2
Arkansas	...	25	...	16	...	1	...	...	...	15
California	4	153	1	72	...	20	...	2	1	50
Colorado	...	2	...	1	...	...	...	...	...	1
Florida	...	2	...	1	...	...	...	...	...	1
Georgia	...	3	...	1	...	...	...	...	...	1
Illinois	14	407	4	295	...	21	...	1	4	273
Indiana	7	38	...	22	...	8	...	1	...	13
Kansas	8	174	2	159	...	50	...	5	2	104
Kentucky	2	26	2	18	...	7	...	...	2	11
Louisiana	1	85	...	65	...	11	...	1	...	53
North Louisiana	1	31	...	20	...	3	...	1	...	16
South Louisiana	...	54	...	45	...	8	...	...	...	37
Michigan	9	171	7	212	...	15	...	...	7	197
Mississippi	...	9	...	5	...	...	...	...	...	5
Missouri	1	37	4	10	...	...	...	...	4	10
Montana	...	2	...	2	...	...	...	...	...	2
Nebraska	...	1	...	...	...	...	...	...	...	1
New Mexico	1	26	1	18	...	1	...	1	1	16
New York	...	...	...	3	...	1	...	1	...	1
Oklahoma	2	124	1	125	...	16	1	6	...	103
Ohio	...	4	...	9	...	1	...	...	...	8
Pennsylvania	...	3	1	3	...	...	...	...	1	3
South Dakota	...	2	...	...	...	...	...	...	...	...
Texas	13	718	29	797	2	74	...	13	27	710
East Texas	1	83	3	74	...	3	...	1	3	70
North Texas	1	95	6	155	1	25	...	1	5	129
Gulf Coast	2	78	4	68	...	5	...	1	4	62
Panhandle	...	7	...	7	...	...	...	...	...	7
South Texas	9	317	15	355	1	27	...	8	14	320
West Texas	...	138	1	138	...	14	...	2	1	122
Utah	...	1	...	...	...	...	...	...	...	...
West Virginia	...	2	...	1	...	...	...	...	...	1
Wyoming	...	5	2	3	...	...	...	...	2	3
Total U. S.	62	2,024	54	1,848	2	226	1	31	51	1,591

CALIFORNIA

FIRST REPORTS

Fresno County—John F. Wilcox's No. 7, 652 ft n and 466 ft 3 sec 11-20-14, Coalinga, shallow area, dr.

Santa Barbara County—Richfield Oil Co.'s San Marcos 3, 2915 ft n, 4802 ft e swc Rancho Tequepis, San Marcos area, rigging.

Monterey County—Priest Valley Pet. Co.'s No. 1, 20-20-12, Priest Valley area, portable rig.

Sutter County—Buttes Oilfields, Inc., No. 6, 660 ft e of No. 5, Marysville Buttes area, grade.

COMPLETIONS

Santa Barbara County—Richfield Oil Co., San Marcos 2, 2460 ft n, 4800 ft e swc Rancho Tequepis, abnd 3600 ft.

ILLINOIS

FIRST REPORTS

Brown County—F. M. Coleman's S. Newcohan 1, 600 ft from north line and 270 ft from west line, ne se 7-2s-3w, fishing at 157 ft. J. W. Fairbairn's Newton 1, 250 ft from south line and 550 ft from west line se 33-2s-4w, sp.

Clark County—Sharp & Stipes' J. C. Sharp 1, c n½ nw ne 31-10n-13w, sp.

Clinton County—J. W. Isabell et al's Billman Estate 1, ne se ne 12-2n-5w, rigging up machine.

Hamilton County — Kingwood Oil Co.'s Schnuck 1, se ne ne 2-4s-8e, dk. W. C. McBride's Hurbaugh 1, se ne se 35-5s-6e, loc.

Jasper County—D. Huddleson's Fee 1, 990 ft from south line and 1650 ft from east line se 7-8n-11e, rigging up rotary.

Marion County—Stearcy Hager's Bachman 1, se sw se 34-4n-2e, dk.

Monroe County—Robert Bender's Mentel 1, 700 ft from east line and 210 ft from south line, sw 1-3s-11w, dr at 590 ft.

Randolph County—Alvin T. Fisher's E. Uchtman 1, ne nw 7-6s-5w, sp for McClosky test.

Shelby County—Gulf Refining Co.'s C. A. Best 1, nw sw nw 20-10n-6e, loc.

Wayne County—Carl Robinson's E. C. Stewart 1, nw ne nw 23-2s-8e, loc.

White County—Jargenson's L. Forker-Morgan 1, c nw nw se 21-2s-8e, loc. Penn-Ill Oil Co.'s Puyle 1, se se ne 12-6s-8e, rigging up rotary.

COMPLETIONS

Cumberland County—Carl Robinson's S. H. Brown 1, sw ne se 1-9n-10e, Crooked Creek tnp, top Devonian 2247 ft, abnd 2381 ft.

Jefferson County—McQueen et al's Sorenson 1, ne ne nw 5-2s-2e, Shilo tnp, top Benoist 2085 ft, abnd 2350 ft.

Marion County—Beacon Oil & Gas Co.'s Vurcell 1, ne nw sw 31-2n-3e, Stevenson tnp, top McClosky 2397 ft, abnd 2415 ft. Papoose Oil Co.'s J. S. Weems 1, ne nw sw 20-1n-4e, Romine tnp, failed to gain saturation, abnd 2974 ft.

INDIANA

FIRST REPORTS

Daviess County—Ralph H. Neely and J. S. Young, Jr.'s E. Stuffle 1, ne ne 29-4n-5w, sp.

Dubois County—A. E. Wenning's Fee 1, 200 ft from south line and 200 ft from west line, nw ne 8-1s-4e, loc.

Gibson County—Hulman et al's (Deep Vein Coal Co.'s) Hollis 1, se sw nw 36-2s-11w, moving in machine.

Knox County — LeRoy Garrison's Geo. Schwab 1, c se nw 9-5n-8w, Widner tnp, moving in materials.

Owen County—J. C. Ellis & W. H. Young's Rice 1, ne nw 29-11n-3w, location for cable tool test.

Posey County—Haynes & Thomas' Seifert 2, ne nw se 19-6s-12w, drilling at 100 ft.

Warren County—A. J. Morris' D. Payne 1, 200 ft from south line and 50 feet from east line, se ne 5-22n-8e, loc.

KANSAS

FIRST REPORTS

Barton County—Simpson Oil Co. et al's Brown 1, cwl nw se 31-20-12w, rur.

Butler County—Simpson et al's Marsh 1, nwc sw 23-28-6e, dr. Rex et al's McKaig 1, sw nw ne 24-28-6e, surface pipe.

Ellis County—Helmerich et al's Simpson 1, nec se 3-11-17w, dr.

Franklin County—Snyder et al's Feeley 1, sw nw nw 27-15-20e, sd.

Sedgwick County—Parks et al's Fisher 1, nwc ne 25-26-1e, rur.

Stafford County—Atlantic Refg Co.'s Harter 1, c el ne sw 9-21-13w, pits.

Woodson County—Turner et al's Tipton 1, se nw sw 32-25-14e, dr.

COMPLETIONS

Barton County—Triangle Drilling Co.'s Breford 1, c sl se sw 25-16-11w, 3 mi sw Stoltenberg pool, top Lansing 3065 ft, top Conglomerate 3340 ft, top Arbuckle 3414 ft, abnd 3447 ft.

Cowley County—Phillips Petroleum Co.'s Glantz 1, sec ne 3-31-3e, 1 mi n Smith pool, top Kansas City 2480 ft, top Mississippi 3061 ft, top Arbuckle 3414 ft, abnd 3438 ft.

KENTUCKY

FIRST REPORTS

Butler County—M. P. Evans' Wilbur Givens 2, 700 ft from east line and 1200 ft from south line, Section 14--33, dr.

Daviess County—Ohio Oil Co.'s Seay Heirs 1, 1050 ft from west line and 1350 ft from south line, Section 7-N-29, drilling at 250 ft.

COMPLETIONS

Butler County—M. P. Evans' Wilbur Givens 2, 700 ft from east line and 1200 ft from south line, Section 14-H-33, 8¼-inch to 55 ft, 6⅝-inch set at 212 ft, water in sand from 315 to 320 ft, abnd 320 ft.

Henderson County — Belmont Quadrangle Drilling Co.'s William Watkins 1, 4 miles south of Henderson near town of Anthoston, dry in McClosky and abandoned.

NORTH LOUISIANA

FIRST REPORTS

Bossier Parish—Longwood Oil & Gas Co., Belcher & Vaughn 1, 3306 ft w and 1980 ft s nec 28-21n-12w, spudded.

MICHIGAN

FIRST REPORTS

Allegan County—Brailey Oil Co.'s Smith 1, nw sw nw 11-2n-13w, rig. H. W. Sigsworth's Hall 1, ne sw se 1-1n-12w, lcn.

Barry County—Strange Oil Co.'s Basore 1, nw nw nw 17-2n-7w, dr.

Kalamazoo County—Smith Petroleum Co.'s Lamb 1, se ne 6-3s-9w, rig.

Kent County—Muskegon Development Co.'s Ruehs 1, se se nw 5n-10w, rig.

Newaygo County—C. D. Hoffman's Dethmers 1, ne se ne 27-11n-14w, rig.

Van Buren County—Daily Crude Oil Co.'s Harter 1, se nw nw 32-2s-13w, rig. Vern Hoffman's Cleveland 1, nw nw nw 31-2s-15w, rig.

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Michi-Cal Oil Co.'s Earl 1, se nw ne 26-4s-14w, lcn.

COMPLETIONS

Branch County — Ralph LaBlanc et al's Haven 1, se sw ne 20-5s-6w, abnd 1257 ft.

Gladwin County—J. V. Wicklund's Lennon 1, c s ne sw 12-19n-1w, Dundee 3469 ft, water 3550 ft, abnd 3552 ft.

Kalamazoo County—Turner Petroleum Co.'s Andrews 1, nw nw sw 31-4s-12w, abnd 1160 ft.

Kent County — Crown Development Co.'s Cole 1, nw ne ne 31-6n-12w, Traverse 1938 ft, abnd 2004 ft.

Midland County — Chapman and Rowmor Companies' Bagley 1, c s sw sw 10-16n-1w, Dundee 3772 ft, abnd 4007 ft.

Missaukee County—C. W. Teater's Currie 1, ne sw nw 29-23n-5w, abnd 1051 ft.

Van Buren County—Roy Gregg's Sackett 1, sw ne ne 17-1s-13w, Traverse 1376 ft, abnd 1417 ft.

MISSOURI

FIRST REPORTS

Ray County—Turner's Craven 1, 10-52n-29w, dr.

COMPLETIONS

Chariton County—Buttram et al's Vance 1, nw se ne 35-53n-18w, top Mississippi 205 ft, top St. Peter (Wilcox) 790 ft, top Arbuckle 835 ft, abnd 920 ft.

Hickory County—Simms et al's May Wilson 1, nec sw 2-37n-21w, top Granite Wash 1526 ft, top La Motte 1350 ft, abnd 1638 ft.

Ray County—Fetherlin et al's Penny 1, c nl s½ nw ne 1-53n-27w, top Hertha 105 ft, top Wayside 235 ft, temp abnd 289 ft. Loomis et al's Macey 1, c nw se 10-53n-27w, top Squirrel 285 ft, top Mississippi 570 ft, abnd 590 ft.

NEW MEXICO

FIRST REPORTS

Chaves County—Elmer J. Fisher & Hill's Hill 1, ne nw sw 8-15s-25e, lcn.

COMPLETIONS

Lea County—P. B. English et al, Miller 1, c ne se 18-19s-32e, elev 3591 ft, top anhydrite 720 ft, top salt 855 to 2365 ft, trace oil 2770-75 ft, first water 2850 ft, hfw (sulphur) 3150 ft and 3860-3900 ft, abnd 4016 ft.

OKLAHOMA

FIRST REPORTS

Noble County—Franks et al's Stranska 1, swc nw 35-24n-1w, dr.

Osage County—Midco Oil Corp.'s Osage 1, nec sw 17-22n-8e, dr.

COMPLETIONS

Creek County—Sunray Oil Corporation et al's Harris 1, swc ne 30-14n-7e, 3 mi s Stroud, top Prue 2902 ft, td 2927 ft, shot with 50 qts 2898-2924 ft, 370,000 cu ft gas, completed.

PENNSYLVANIA

COMPLETIONS

Potter County — Evjen & Harris' A. R. Mitchell 1, Sweden tnp, top Onondaga 5395 ft, no Oriskany sand, abnd 5501 ft.

EAST TEXAS

FIRST REPORTS

Panola County—Turner & Smith, Panola Dev. Co. 1, George Gallaspie sur, moving in materials.

COMPLETIONS

Kaufman County — A. J. Tyler & C. C. Smith's Trinity Farms Co. 1, 450 ft fr n and 350 ft fr w lines of G. Crocker sur, 3½ mi sw Mabank, elev 312 ft, Pecan chalk 1700-1800 ft, Austin chalk 2562-2990 ft, abnd in Woodbine water 3540 ft.

Smith County—J. H. Thomason et al's J. W. Bartlett 1, 450 ft fr s and 150 ft fr w lines of 112.84-acre lease, R. G. Stewart sur, 1½ mi se Jamestown, elev 394 ft, abnd 2085 ft.

Titus County—Superior Oil Co. (Tulsa's) John Hargrove 1, 900 ft fr n and 300 ft fr w lines of south 200-acre tract, S. B. Patton sur, 6 mi sw Mount Pleasant, elev 311 ft, top Pecan chalk 2250 ft, top Georgetown lime between 4558-68 ft, top Paluxy series between 5630-40 ft, jkd and abnd in shale 5925 ft.

NORTH TEXAS

FIRST REPORTS

Cooke County—R. H. Alexander et al's S. E. Jones 1, 2840 ft fr s and 2180 ft fr e lines of J. Lewis sur A-567, dr 800 ft.

COMPLETIONS

Archer County—B. C. Gilmore et al's L. W. Williams 1, 450 ft fr n and 150 ft fr e lines of J. Saunders sur, A-644, trace oil 715-19 ft, abnd 770 ft.

Baylor County—Consolidated Oil Co.'s F. C. Green 1, c ne T&NO sec 230, A-1508, abnd 3225 ft.

Clay County—Consolidated Oil Co. et al's C. H. Bevering-Foster Pet. Co. 1, 2970 ft fr s and 330 ft fr e lines of BBB&C sec 9, A-69, top Ellenberger lime 3042 ft, abnd 3090 ft.

Cooke County—Trumter Oil Co.'s F. Hess 1, 2600 ft fr s and 750 ft fr e lines of Patsey Lewis sur, A-565, abnd 1982 ft.

Motley County—Santa Rosa, Inc.'s C. D. Bird 1, se sw ne sec 3, blk S, J. Stephens sur, temp. abnd 350 ft.

Wilbarger County—Consolidated Oil Co.-D. E. Hepler's W. T. Waggoner 1-CC, nw se se H&TC sec 36, blk 6, top lime 3763 ft, lime 3985-4005 ft, dry lime 4005-25 ft, sandy-lime pay 4025-65 ft, pumped 250 barrels oil and 25 bbls salt water initial.

TEXAS GULF COAST

FIRST REPORTS

Wharton County — Humble's Schwartz 1, Lane City area, 2332 ft nw of se line and 1399 ft ne of sw line of T. M. Blake sur, lcn. W. Stewart Boyle's Britton 1, north of Louise, 330 ft out of the nwc of 100-ac tract in F. Page No. 8, lcn.

COMPLETIONS

Galveston County—Sun's State 1-179, 2400 ft nw of se line of sec 179 and 4600 ft ne of nw line of same sec in sec 175, abnd 8355 ft.

Jasper County—C. B. Bunte's Cartwright 1, Magnolia Springs area, 406 ft fr s and e lines of lot 16, Franklin subd, E. O. Lagrande sur, abnd 7759 ft.

Jefferson County—Magnolia's Phelan 6, 466 ft s of n line and 466 ft e of w line of 348-acre tract, H. & T. B. No. 1, abnd 8227 ft.

Tyler County—J. H. Bonham's Kountz 1, Rockland area, 1640 ft n and 1320 ft w of nec of J. A. Hankins sur, E. Smith sur, abnd 417 ft.

SOUTH TEXAS

FIRST REPORTS

Caldwell County—Dr. F. J. Atha's Carter 1 (WC), 175 ft most s'ly nw line, 960 ft most e'ly ne line, 96-ac tr, Gideon Pace sur, lcn.

Duval County—Lanning & Coffield's Lopez 1, 330 ft n line, 330 ft w line of se¼ of nw¼ of BS&F sur 455, 2 mile n Cole field, lcn. Magnolia Petroleum Co.'s DCRC 1, 330 ft n line, 990 ft w line of nw¼ of BS&F sur 262, 2 mi nw Lundell, lcn, clearing rd.

Jim Wells County—William H. Spice, Jr., et al's Schallert 1, 4386 ft s line, 1629 ft e line of sh 3-A, Los Presenos de Abajo Gr, Ab. 0171, 9 mi ne of Alice and 660 ft ne of Camp No. 1 Schallert, rigging up.

LaSalle County—Eugene Garner's Yeager 6, 510 ft e line, 264 ft s line blk 3, sec 8, W. H. Wallace subd of Louis Yeager Ranch, J. T. Doswell sur 111, lcn.

Live Oak County—Henderson Coquat's Moss 1, 82 ft s line, 153 ft e line of tr, 1580, sec 29, Dr. C. F. Simmons Farm Lots subd, scales 720 ft s of Nueces River and 13,600 ft w line of county, 1 mi nw of Simmons City, drilling 1367 ft.

Medina County—Elstone Oil Co.'s Mann 1, 310 ft n line, 310 ft w line 270-ac tr, J. C. Campbell sur, lcn.

Nueces County — Premont Petroleum Co.'s Langham 1, 330 ft s line, 330 ft w line of lot 12, sec 25, Benton Pasture subd Antonio Longoria gr, ab-203, set sur csg, woc 1000 ft.

Refugio County—Humble Oil and Refining Co.'s Thompson 5, 466 ft due w of middle nw cor of Daniel Driscoll sur and in Maximo Gomez sur, Ab-30, 10¾-in csg at 1017 ft, prep drill plugs 1017 ft.

COMPLETIONS

Bexar County—E. B. Harris' Schroeder 1, 700 ft e line, 700 ft s line of 99.9-ac tr, L. Bust sur 37, top Austin chalk, 746 ft, base Austin chalk, 872 ft, top Eagleford 872 ft, top Buda 884 ft, top Del Rio 944 ft, top Georgetown 993 ft, abnd 1005 ft.

DeWitt County—G. M. Richardson's McCurdy 1, 330 ft s and 160 ft w of se cor of C. A. Schlinke 796-ac tr, but in 693-ac McCurdy tr, John C. Hunt sur, temp abnd 1650 ft.

Edwards County—O. L. Alderfer and C. W. Davis' Earwood 1, 150 ft e line, 450 ft n line of e 80-ac lse of se¼ CCSD and RGNG sur 158, abnd 85 ft.

Jackson County—Moore and Aheran and Cron and Gracey's Heard 1, 466 ft nw line, 466 ft sw line of 100-ac tr, Morris and Cummins sur 13, abnd 4965 ft, drill pipe stuck.

Jim Hogg County — Magnolia Petroleum Co.'s Yzaguirre 1, 4500 ft w line, 9000 ft n line of 14,987.2-ac lse, Jose Manuel Ramirez "Agua Nuevada Abajo" gr, sandy shale/oil odor, 5395-5402 ft, abnd 5855 ft.

Karnes County—Paul L. Meaders' Ruhman et al 1, 330 ft s and 990 ft w of ne cor of blk 26, P. B. Butler subd, Medio Ranch, James Richardson sur, Ab 393, top Jackson, 2070 ft, abnd 3254 ft.

McMullen County — Richardson and McKenzie's Franklin (Green) 1, 3509 ft n line, 675 ft w line of tr, BS&F sur 67, abnd 2620 ft.

Nueces County—Joe W. Cosner et al's Lehman 1, 330 ft s line, 330 ft e line of s 40-ac of w 115-ac of s½ of sec 11, Laureles farm tr subd, abnd 6010 ft. J. O. Williams Tr.'s Roberts 1, 330 ft s line, 330 ft e line of 60-ac lse, sec 61, George H. Paul's subd of Driscoll Ranch, oil sand 5410-13 ft, shale 5413-24 ft, temp abnd 5746 ft.

Refugio County—Sunset Oil Co.'s Heinen 1, 330 ft e line, 660 ft s line of 240-ac tr, and sec 10, Bonnie View Ranch subd, Jose Maria Aldrete and Jose Miguel Aldrete gr, ab-2 and 3, distillate sand 6521-29 ft, abnd at 7017 ft. Humble Oil and Refining Co.'s Thompson 4, 13,199 ft n of s'ly s line, 466 ft w of e line of Thompson ranch, Cuadrilla Irrigation Co. sur, abnd 6374 ft.

Starr County—R. C. Hillman's Gonzales 2, 330 ft n and 165 ft e at rt ang fr se cor of sh 239, but in sh 43, porc 70, dry sand 845-65 ft, sand/oil odor 1375-80 ft, abnd 1380 ft. Eugene J. Liberty's Kelsey Bass 1-A, 500 ft nw line, 300 ft ne line of sur 71, script 76, salt water sand 1775-80 ft, abnd 1780 ft. Magnolia Petroleum Co.'s Fee-Guerra 2, 2970 ft w line, 2310 ft s line of 5964.7-ac tr and F. Farrias "Santa Cruz" gr, ab-79, sand/distillate show 5800-32 ft, flowed 4,380,000 cubic feet gas per day and 6 bbls distillate in 6 hours, 9/64-inch choke, 2075 pounds tubing and 2200 pounds casing pressure, td 6566 ft. Packer Petroleum Co.'s Guerra 1, 175 ft s line, 150 ft e line of blk 6, sh 253, porc 69, sand 1340-1408 ft, abnd at 1408 ft. W. W. Zimmerman s Guerra 2, 330 ft w line, 390 ft s line of blk 30, sur 299, sand/oil odor 813-19 ft; sand/oil odor, 844-50 ft, abnd 850 ft.

Webb County—H. K. Boysan and Brian Jones' Watkins 4, 1570 ft s line, 2970 ft e line sec 11, San Casimreo "Valentine de las Fuentes" gr, oil sand 777-85 ft, abnd 790 ft, tested small amt oil.

Williamson County—L. M. White's Sitman 1, 600 ft s line, 180 ft e line of 80-ac lse, T. A. Moore sur, top Austin chalk, 990 ft, abnd 1052 ft.

WEST TEXAS

COMPLETIONS

Pecos County — Thomasson Prod. Co.'s Young-Humble 1, 330 ft fr nw and sw lines H&GN sec 33, blk 10, elev 2453 ft, top anhydrite 516 ft, top Yates 1370 ft, abnd in sulphur water 1900-03 ft.

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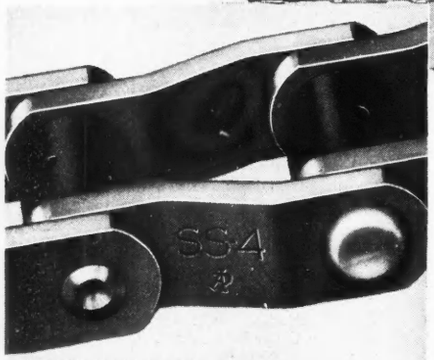

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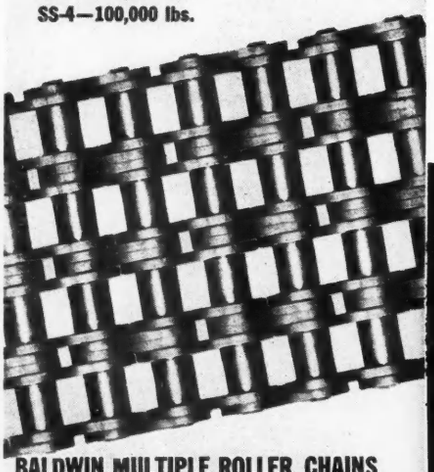

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FOR SALE IN ALL OIL FIELDS

Chain Transmi

ALL *the* POWE

NOTES FOR THE Equipment Buyer and User

Electrode
THE LINCOLN ELECTRIC COMPANY

A new arc welding electrode, which will facilitate finishing operations on welded products by eliminating the need of dressing or smoothing welded seams in many applications, is announced by The Lincoln Electric Company, Cleveland, Ohio.

The new electrode, known as "Fleetweld 10," is designed particularly for finish bead welding on "U" groove welding in downhand position. The electrode provides full slag coverage and a weld deposit of exceptional smoothness. The bead is uniform and regular without square shoulders. The metal smooths out evenly during welding and the line of fusion with the base metal is practically unnoticeable. Finish beads can be made in V-butt joints in flat position which are flush with the surface of the plates. The surface of the bead made with the electrode has much less of the "rippled" effect which characterizes the usual weld deposit.

"Fleetweld 10" can be used with either normal or reverse polarity with D.C. current, or with A.C. It is made in two sizes in 18-inch lengths, ¼-inch and 5/16-inch, and is packed in 50-pound containers as standard packages.

Turning Machine
LANDIS MACHINE COMPANY

A double-head machine was recently equipped by Landis Machine Company, Waynesboro, Pennsylvania, for a combination pointing, beveling, turning and facing operation.

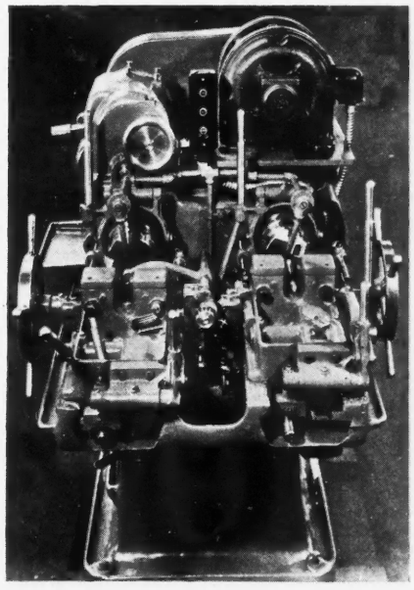
The machine is the standard Landis ⅞-inch double-head threading machine equipped with lead screws and with ⅞-inch "Lanco" hardened and ground heads. To this standard machine have been added several fixtures which make it possible to handle this special turning operation efficiently and economically.

The special fixtures on this machine include the milling cutters, which replace the usual chasers, a spring-actuated tool holder to carry the pointing and beveling tool, and the automatic work stop for positioning the work in the vises.

Special milling cutters can be used for reducing the body diameters of long length bolts; or cutters for a combination turning and shoulder facing operation can be substituted for the regular milling cutters.

The pointing and beveling tools are carried in a holder which extends entirely through the spindle. This tool holder can be adjusted, at the rear of the spindle, to permit the turning, pointing, and beveling of work for a length of 5 inches.

The efficiency of handling turning operations on a machine of this type greatly increases production possibilities, and, likewise, the accuracy of the finished product is much improved. The four milling cutters operating in a single plane about the axis of the work assure a uniform cutting action that produces a perfectly round turning job. This machine can also be used for threading if desired.



Landis Turning Machine

Convertible Shovel

Complete description of a new Bucyrus-Erie convertible 44-B, 2-yard shovel is attractively presented in a 32-page bulletin recently published by the manufacturer. Features of the machine are fully explained, and photographic illustrations are used profusely to portray structural and mechanical details. Copies may be obtained from Bucyrus-Erie Company, South Milwaukee, Wisconsin. Ask for Bulletin No. 44-B1.

Well Logging Service
BAROID SALES DEPARTMENT

Baroid Sales Department, National Lead Company has developed a new and unique method of determining the content of the various formations encountered while drilling, and of accurately logging the depths and thicknesses of such formations, the company announces.

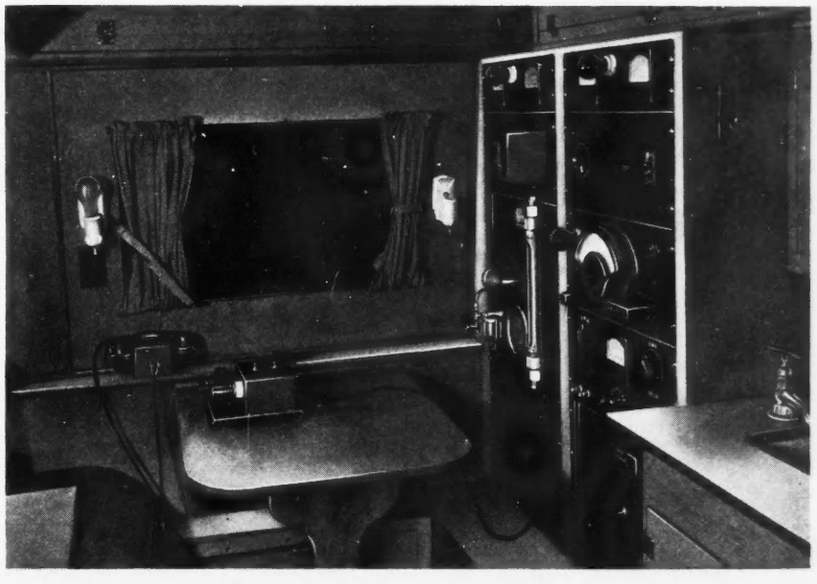
The new method is simple, relatively foolproof, and in addition to permitting accurate data to be obtained on the content and depths of the sands, it also gives the operator additional information.

This Baroid Well-Logging Service is based on the principle that the oil, gas, or salt water content of any formation drilled up by the bit must necessarily be picked up by the drilling mud. If, then, any unit volume of the drilling mud, upon returning to the surface, is subjected to the necessary tests and the content of that unit volume is accurately correlated with the depth of the hole at the time that particular unit volume of mud was passing the bit, not only is it possib e to determine whether or not that particular part of the formation being drilled contains gas, oil, or salt water, but it is even possible to determine the relative quantities contained in that part of the formation.

More than 40 wells have been drilled using this method and the results obtained have given the operator much more information than he has ever been able to obtain before. It also has resulted in such marked saving in time and expense that it appears likely that the method will have a wide application in future drilling.

The equipment necessary to make the tests which disclose the desired information is mounted in a trailer.

A gas detector of extremely sensitive



Baroid Well-Logging Service

You'll Find

MURRAY RUBBER

In Many of the Leading Oil Tools, Including

CAMERON

High Pressure Drilling Control Equipment and other specialties

The tremendous responsibility placed upon Cameron High Pressure Control Equipment calls for the highest quality materials available . . . and Murray Rubber products are used by Cameron, not only in ram packing elements for their ram-type blowout preventers, but in Cameron mud valves, packers, control valves, etc.

Our modern facilities and factory-trained men are always ready to give you prompt, efficient service on highest quality mechanical rubber goods and synthetic oil-resisting products.

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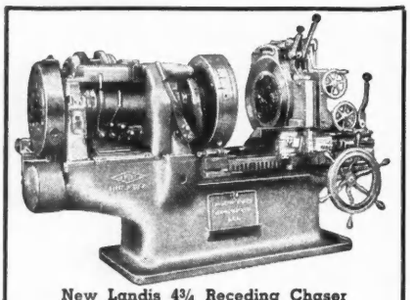

New Landis 4¾ Receding Chaser Pipe Threading Machine

COMPLETE LINES

Machine Tools—Metal Working Machinery—Bolt and Pipe Threading Machines—Electric Arc Spot and Butt Welders—Hand Power and Electric Traveling Cranes—Foundry and Forge Shop Equipment.

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STANDCO BRAKE LINING

Is the driller's best friend because It makes the easiest brake known and "feeds off" evenly while drilling. It never scores brake rims. See Page 2100 Composite Catalog.

Standco Brake Lining Co.

HOUSTON

NOTES FOR THE Equipment Buyer and User

design allows a full-scale reading with as little as one cubic inch of gas per hour. A very important development in connection with the use of the gas detector is that it has been found that while drilling, indications of an approach to oil and gas sands can be obtained 15 or 20 feet before the sands are actually encountered!

An ultra-violet light, oil detection device enables the operator to detect small oil sands of a couple of feet in thickness. A correction factor is also used for evaluating the oil readings, which depends upon the rate of drilling, the diameter of the hole, and the rate of mud circulation.

Another important piece of equipment is the apparatus used for logging salt water. The method used consists of placing electrodes in the ingoing and outgoing mud and comparing the resistances, making proper allowance for the time taken for any increment of the mud stream to traverse the subsurface circulating system. A resistance measuring bridge automatically corrects the readings for temperature.

A depth recorder will show automatically the total depth of the well at all times, and in addition thereto the depth of the bit at any given time. The depths shown on the recorder are accurate to within a few inches. A drilling rate meter functioning in connection with the depth recorder will also be provided. This instrument automatically draws a log.

A pump-stroke counter and a rate meter for determining the rate at which the pump is running in complete cycles per minute, enables the operator to relate the findings of the other instruments to the depths to which they apply. The instrument measures the quantity of mud circulated which is necessary because of the lag between the time the sample of the mud passes the bit and the time it reaches the surface and is analyzed. One of the most important uses of the pump-stroke counter is its ability to give warning of washouts. When a washout starts, the pump rate commences to increase and continues to increse slowly, until failure of the pipe occurs. This speeding up, being slow, is almost imperceptible to the driller but is easily noted on the pump-stroke counter. Speed changes due to variations in boiler pressures area easily distinguished from those due to an incipient washout because changes due to boiler pressure are up and down and of small amplitude, while the changes due to a washout is a steady increase. Where this instrument has been used on rigs, the operator has been able to warn the driller when a washout has commenced and thus enabled the pipe to be pulled and the washout located before failure occurred. Other variances in the readings of the instrument will indicate caving, or that circulation is too slow, or the mud not sufficiently thick to carry cuttings to the surface which might result in stuck drill pipe.

Complete core analysis equipment is also furnished in the trailers which enables the operator to test the porosity and permeability of any cores he may take.

A new fully illustrated bulletin describing the Baroid Well-Logging Service Equipment and procedure in graphic detail may also be obtained at Baroid Sales Department offices at Los Angeles, Houston, or Tulsa.

Acid Soluble Metal
DOWELL, INCORPORATED

Announcement has been made by Dowell, Incorporated, Tulsa, Oklahoma, of Dowmetal, a new extremely light weight magnesium alloy pipe that is completely acid soluble.

Dowmetal is not to be considered as a substitute for steel pipe, but is intended for use as pipe sections or liners opposite one or more producing zones. The principal advantage of using Dowmetal, according to Dowell claims, is its ease of removal with inhibited hydrochloric acid after the string has been cemented in place. One or more sections of the pipe may be used. This feature permits the removal of the Dowmetal section opposite any likely producing horizon at any desired time. Thus, a well may be produced from a lower zone until depleted, and then by removal of the Dowmetal pipe section an upper formation may be opened for production. Dowell also recommends its use in controlling high gas/oil ratios and in shutting off water zones.

The running of Dowmetal pipe or liners is accomplished without the use of special tools. One section of Dowmetal can be welded to another Dowmetal section. Dowmetal sections cannot be welded to steel sections. However, for such connections regular A.P.I. thread joints are recommended.

The average specific gravity of Dowmetal alloy is 1.800, while the heaviest alloy has a specific gravity of only 1.83. Dowmetal is the lightest structural metal in use today, weighing but 0.065 pound per cubic inch, and combines a high strength-weight ratio with toughness and fatigue endurance.

Dowmetal pipe sections and liners may be removed by either of three methods: (1) the circulation method; (2) the rocking method; and (3) the acid jet gun method.

In the circulation method, the tubing is spotted near the bottom of the Dowmetal section. The acid is introduced down the tubing, allowing the returns from the casing head to flow into a vented tank. Six hours is sufficient time in the average well.

In the rocking method, circulation is reversed after all the predetermined volume of acid is pumped out of the tubing. This may be done by pumping down the casing, flowing returns from the tubing into the vented tank. This method is said to increase the efficiency and to use a minimum volume of acid in deeper wells. On completion all the acid may be circulated out with water.

The acid jet gun method of acidizing Dowmetal pipe and cement provides a means for the rapid cutting of large holes completely through both the Dowmetal and cement. To accomplish this a gun barrel has been built which

NOTES FOR THE Equipment Buyer and User

contains a multiplicity of nozzles, usually placed at right angles to the pipe, to be attached on the end of the tubing and spotted opposite the Dowmetal sections to be removed. Acid is pumped through the gun at high velocities. Tests indicate a 4-inch diameter hole can be cut through 3 inches of cement under fluid in about 10 minutes with acid at 1000 pounds pump pressure.

Parkersburg Acquiring Stock Control of O.C.S. Company

C. A. Ruf, vice president and general manager of The Parkersburg Rig and Reel Company announced August 23 that stockholders of that company had been asked to approve acquisition of the common stock of The Oil Country Specialties Manufacturing Company at a meeting to be held on September 8.

The Parkersburg Rig & Reel Company with plant and offices at Parkersburg, West Virginia, was founded in 1897 by John M. Crawford, the present chairman of the board. His brother, David B. Crawford, president of the company, has been associated with the business for 40 years. Ruf started with the company 20 years ago. B. M. Farson is secretary and treasurer.

With warehouses located in principal producing areas in this country Parkersburg Rig & Reel Company has a well established business, manufacturing and marketing steel derricks, bolted and welded steel tanks, gear driven pumping units, hydromatic brakes, and in May of this year added the Smith Separator to its line of products.

The Oil Country Specialties Manufacturing Company has manufacturing plants located at Coffeyville, Kansas, Houston, Texas, and Long Beach, California.

W. P. Turner, president, located in Long Beach, and D. R. Brown, vice president and general manager, located at Coffeyville, organized the company 20 years ago. D. C. Myers is secretary and treasurer.

O.C.S. manufactures and markets a line of chain driven pumping units, clutches, hoists and special machinery.

If the acquisition is approved by Parkersburg Rig & Reel stockholders, it is contemplated that the two organizations will be conducted independently, continuing present operating policies of each company in effect as heretofore.

Bynum Representing Hydraulic Press Company out of Houston

John A. Bynum, Jr., of Houston, has been appointed manufacturers representative of the Hydraulic Press Manufacturing Company of Mt. Gilead, Ohio, in the sale of the company's line of forged valves and fittings in Texas, Oklahoma, Louisiana and Southern Arkansas. He will make his headquarters in Houston.

Chain Belt Company Acquires Baldwin-Duckworth Corporation

Chain Belt Company has acquired the business, plants and equipment of the Baldwin-Duckworth Chain Corporation, Springfield and Worcester, Mass. This corporation was organized through the merger of Baldwin Chain & Manufacturing Company of Worcester, founded in 1896 and Duckworth Chain & Manufacturing Company, founded in 1871. It has had an exceptionally successful history in financial strength, earnings and growth. It is one of the leading producers of machine finished roller chains, cut sprocket wheels, flexible couplings, automotive timing chains and certain types of conveyor chains.

"There is practically no duplication between these lines and the products at present manufactured by us," states C. R. Messinger, president of Chain Belt Company.

"Since 1932, Chain Belt Company, under its trade-mark, "REX," has been marketing machine finished roller chains and accessories made for it by Baldwin-Duckworth. The volume of this business has increased steadily and has become so important a factor to our company that it was desirable to take the necessary steps for assuring that our source of supply for these chains and accessories would be a permanent one. The consolidation of the two companies was a natural consequence.

"We are keeping intact the present manufacturing and sales facilities of each company except that Baldwin-Duckworth Chain Corporation will operate as the Baldwin-Duckworth Division of Chain Belt Company and as

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REED'S 'B-R' DRILLING BIT WITH WIRE LINE RETRACTABLE CORE BARREL
ANY NUMBER OF CORES CAN BE TAKEN (REGARDLESS OF DEPTH) WITHOUT REMOVING THE DRILL PIPE
HARD FORMATION HEAD (Interchangeable with Soft Formation Head)
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For Shallow Wells
Cup makers since 1912
The World's Standard In Shallow Well Cups
"No Cut Crude" is Nobs Composition's avowed—achieved—objective. Has no equal in shallow well service. Built to our exclusive formula, Nobs are of softer (than Dragon Composition), slightly pliable but tough, wear-resisting materials. "Tailored" by cup specialists in our modern plant, under rigid inspection, Nobs Cups are correct to last detail for meeting all shallow well conditions . . . If you haven't used Nobs, write for FREE samples . . . also Dragon Composition, for deep wells . . . and Dragon Leather.
THE DRAGON MFG. CO.
Marietta - - - - - Ohio
"On Duty or in Competition . . as Fearless as the Dragon."

NOTES FOR THE Equipment Buyer and User

such it will continue to be directed by men who have been identified with it for many years.

"We of Chain Belt Company are proud of our new relationship with one of the industry's largest and most successful companies, which completes another important element in our program of providing an exceptional line of transmission and conveying equipment."

Davis to Service UCC Combustible Gas Indicators

Service on all UCC Combustible Gas Indicators, manufactured by Linde Air Products Company, now in use will hereafter be maintained by Davis Emergency Equipment Company, 55 Van Dam Street, New York, according to an announcement made by F. R. Davis, president of the Davis Company. This service includes supplying renewal parts, making repairs, and furnishing operating instructions for these instruments which are used for detecting inflammable and explosive gas-air mixtures. Davis also stated that instruments carrying the exclusive, patented features of the UCC Indicators will continue to be available through his company.

Pittsburgh Meter Transfers Cloran to Los Angeles

E. M. (Mike) Cloran, formerly in the engineering department of Pittsburgh Equitable Meter Company and Merco Nordstrom Valve Company in Pittsburgh, was recently transferred to the company's Los Angeles office. He will handle sales engineering duties, chiefly contacting gas and petroleum departments of Southern California corporations. After graduating from Harvard ('31) he became associated with Stone & Webster and later was with Atlas Ferric Nitrogen Corporation. He is a member of the sub-committee on Industrial Instruments and Regulators of ASME.

E. M. CLORAN

Star Manufacturing Company Sales Headquarters at Tulsa

Star Manufacturing Company, Oklahoma City, manufacturers of sectional steel buildings and related oil-field equipment, is to direct all sales from its office in Thompson building, Tulsa, with O. G. Houser as general sales manager in charge of the office. Also under his direction will be sales outlets in Houston, Denver, Dallas and Shreveport. Prior to his present position, Houser has been serving as vice president and treasurer of C. W. Cotton Company and for a number of years was with Continental Supply Company.

Makes Personnel Changes

The Vapor Recovery Systems Company, Compton, California, announces changes in the personnel of its Eastern Sales offices at 30 Church Street, New York City. Frank M. Holloway, formerly manager at Houston, Texas, will be in charge. He will be assisted by James G. Burnett. Joe M. Greenlee will be in charge of the Houston office.

J. B. Durkee Appointed Sales Representative for McEvoy

McEvoy Company has announced the appointment of J. B. Durkee as sales representative in Tulsa, Dallas, San Antonio, and Shreveport.

Durkee, a native of California, has done graduate work at Massachusetts Institute of Technology. During the war he was trained, and commissioned in naval aviation. Shortly after the war he started in the Texas oil fields as a roughneck and worked up to assistant superintendent.

He served eight years as sales representative for A. M. Byers Company in Tulsa and Dallas and moved to Houston in 1934 as district manager for the same company.

J. B. DURKEE

Complete stock (including Standard, Malleable and Cast Iron Fittings and Nipples) always carried by J. E. Bobo, 2120 Rothwell Street, Houston, Texas, and at the factory.

DEVLIN
HEAVY OIL MALLEABLES

No pipe line failures through faulty fittings! All DEVLIN Heavy Oil Malleables are made from highest quality materials, accurately tapped and threaded . . . all DEVLIN products are carefully inspected during manufacture and before final shipment.

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Elbows, Tees, Crosses, Y's, Return Bends, Couplings, etc. Black or Galvanized. Write for literature showing sizes and prices.

FRETZ SEAMLESS NIPPLES
Made from new high quality tested seamless tubing . . . accurately threaded . . . carefully reamed. Standard, Extra heavy, Double Extra heavy, Black or Galvanized. Shipped with distinctive Devlin Thread Protectors.

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THOMAS DEVLIN MANUFACTURING CO.
BURLINGTON, NEW JERSEY

NOW! an oil-field DESIGNED PUMPER ENGINE

Here is an oil-field pumper engine that was designed by oil-field engineers and operators, especially for pumper service. The new Novo continuous-duty power unit has—heavy crankshaft, heavy flywheel, anti-friction bearings, big capacity cooling system, extra large oil and gasoline capacity, heavy-duty Twin Disc Clutch.

Sales and Service By

THE NATIONAL SUPPLY COMPANY

Get the detailed specifications now. Ask for Novo Bulletin No. 43 on single, 2 and 4 cylinder models.

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LANSING, MICHIGAN

Here are best modern methods of petroleum recovery

Here is a thorough-going description and analysis of the most recently developed methods and devices for promoting production efficiency in the oil industry . . . from completion of wells to transportation of the products to market.

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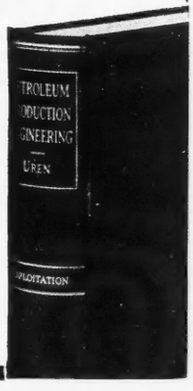
By LESTER C. UREN
Professor of Petroleum Engineering
University of California

Second Edition **741 Pages** **Illustrated** **$6.00**



Here are up-to-the-minute data on how to drain petroleum from its reservoir rocks, how to bring it to the surface and prepare it for shipment, how to care for and remove impurities from the crude petroleum, how to design, construct and operate pipe lines. The book is based on the author's contacts with all the important oil-producing regions of the United States.

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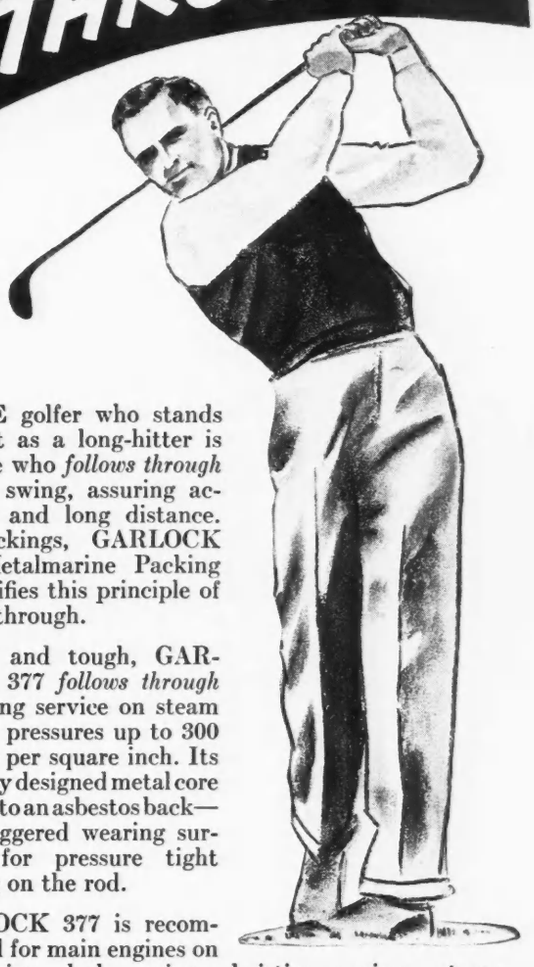


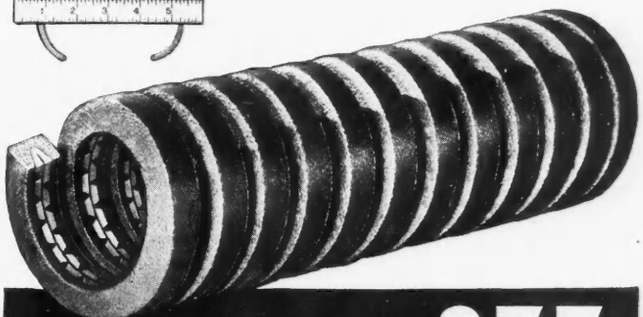
THE golfer who stands out as a long-hitter is the one who *follows through* on his swing, assuring accuracy and long distance. In packings, GARLOCK 377 Metalmarine Packing exemplifies this principle of follow-through.

Strong and tough, GARLOCK 377 *follows through* with long service on steam rods at pressures up to 300 pounds per square inch. Its specially designed metal core—set into an asbestos back—has staggered wearing surfaces, for pressure tight bearing on the rod.

GARLOCK 377 is recommended for main engines on steamships, deck engines, hoisting engines, steam shovels, dredges, steam hammers, kickers, steam niggers and general steam service.

THE GARLOCK PACKING COMPANY
PALMYRA, N. Y.

Tulsa, Okla. Houston, Tex.
Los Angeles, Calif.



GARLOCK 377

Squeaks from the Bull Wheel

As You Like It

Early to bed and early to rise
  Does very well for preachers and guys,
But makes a man miss all the fun when he dies
  And joins the old stiffs that are up in the skies.

Go to bed when you please,
  And lie at your ease,
And you'll die just the same
  From a Latin disease.

Slide Rule

"If it takes 20 men to mow a field in eight hours, how long will it take 15 men to mow the same field?"

"As the field has already been mowed by the 20 men, the 15 men could not mow it in any case."

Live and Let Live

"You will not be permitted to drive a car for two years. You are a menace to pedestrians."

"But your honor, my living depends on it."

"So does theirs."

Lasting Impressions

"And I suppose you first learned right from wrong at your mother's knee?"

"No, across my father's."

Curves—and How

"Did you get those bowlegs from a horse?"

"No, lady, these are my own legs, but a horse just helped give them that rainbow effect."

Not Regional

"Do you know, dad, that in some parts of Africa a man doesn't know his wife until he marries her?"

"Why single out Africa?"

Worm Wiggles

Let me look at that letter you just opened. I can see it's in a woman's handwriting and I noticed you turned pale when you read it.

You can have it, with pleasure; it's from your dressmaker.

Heart Warming

"I'm afraid, Oliver, you do not love me any more—at least, not so much as you used to."

"Why?"

"Because you always let me get up to light the fire now."

"Nonsense, my dear. Your getting up to light the fire makes me love you all the more."

Reliable Test

"Hey, Bill! grab hold of one of those wires."

"O. K. I've got one."

"Feel anything?"

"Nope."

"Good! I wasn't sure which was which. Don't touch the other!"

P.W.A.

"Say, foreman, will you please give me a shovel? I'm the only one in the gang who ain't got one."

"Don't you know that if you ain't got a shovel you don't have to dig?"

"Yeah, I know that, but all the rest of the guys have something to lean on and I have to stand up."

No Upkeep Involved Either

"I want a man to do odd jobs about the house, run errands, one who never answers back, and is always ready to do my bidding."

"You're looking for a husband, ma'am, not a servant!"

Quick Return

"Let's talk about you for a while."

"All right, dear."

"Well then, what does a young man like you see in a girl like me?"

Plenty of Reason

"Why do you look so blue?"

"I'm sore at my girl."

"What's the matter?"

"She's two-timing me?"

"How do you know?"

"She just got married."

Not-so-Far West

"Has the advent of the radio helped ranch life?"

"I'll say it has. Why, we learn a new cowboy song every night and say, we've found out that the dialect us fellers has used fer years is all wrong."

Trifles

"Why keep worrying about the children?"

"I can't help it."

"But, my dear, you are hurting your bridge game."

Cured

"I understand that Betty has cured her boyfriend of stuttering. How did she do it?"

"She called him up long-distance, collect."

Better Than None

"Why did you tell Joe you married me because I'm such a wonderful cook? I can't boil a potato."

"But I had to give some excuse."

Not Enough Sugar?

"That ham I bought yesterday was bad."

"How could it be? It was cured last week."

"It must have had a relapse then."

Due to the Drouth

"You ain't a Baptist by any means, are you?" asked the mayor of an Arizona town, of an applicant for the pastorate of the local community church.

"No, sir, I am not," replied the minister.

"I'm glad of that. You see we've got to haul water twelve miles here."

PROVEN ECONOMY!

"The Entirely Different Boiler and Engine Treatment"

Every day Sand-Banum proves to hundreds of operators its unbeatable economy and efficiency. Everywhere Sand-Banum-protected boilers and engines are operating at the peak of efficiency and the minimum cost for control of scale and corrosion. Water impurities and operating conditions may change from hour to hour but Sand-Banum's pure colloidal action insures real protection at all times!

Not only is it SAFE . . . SURE . . . and CONSTANT but SO SIMPLE to use. Unlike other treatments, it comes in 16-oz. cans—**ready to use!** Its active ingredients are so highly concentrated that each can protects a 250 Hp. boiler for a month. Costly and bothersome water analyses and frequent tube replacements are unnecessary when Sand-Banum is on the job. The "tougher the going" the more modern operators depend upon Sand-Banum!

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Travelers acclaim the fine food in the two modern restaurants – the Steamboat Cabin Coffee Shop and the Old English Tap Room – they praise the friendly atmosphere and fine service – and they never forget the modern rooms and the IDEAL LOCATION of the Mark Twain.

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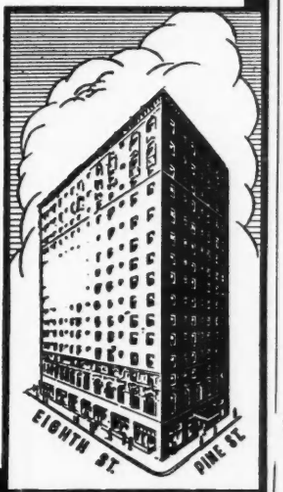

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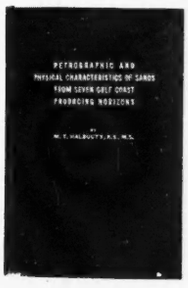
By M. T. HALBOUTY, B.S., M.S., Merit Oil Corp.



The material printed in this book was first published in The OIL WEEKLY in a number of installments, extending over a seven-week period. Because of the widespread interest and demand for copies, it is being presented in book form for the benefit of those who may wish to study or continue the research work of M. T. Halbouty, the author.

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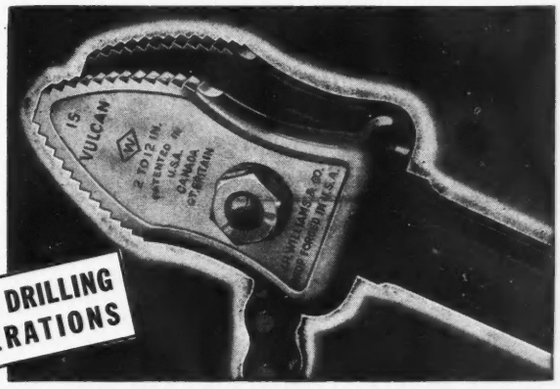

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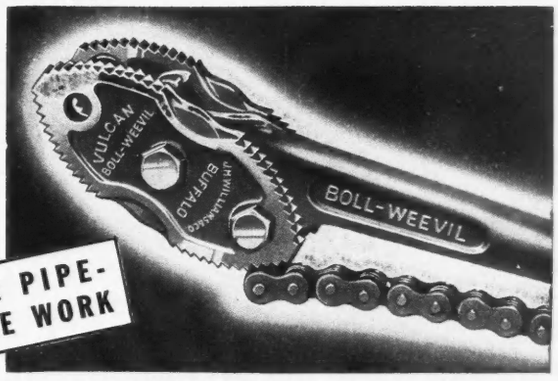

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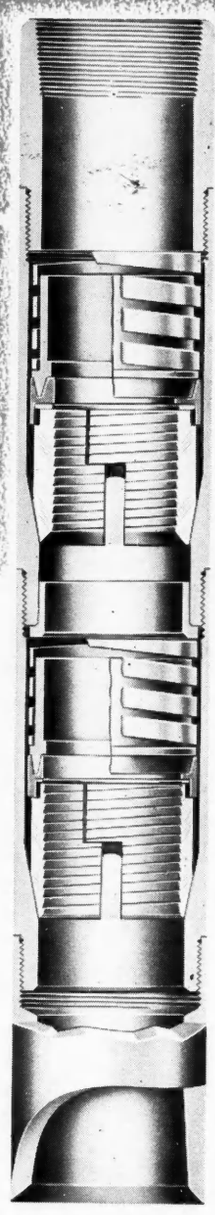

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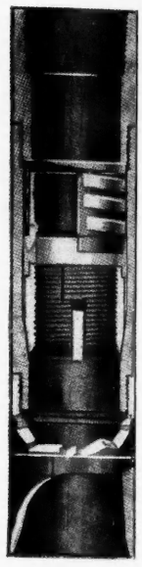

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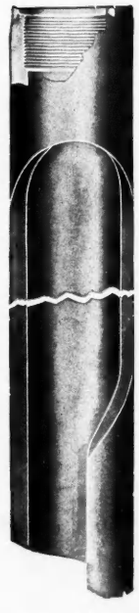

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THE OIL WEEKLY
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OPERATORS, GEOLOGISTS AND DRILLERS ALL LIKE THIS COMBINED CORE DRILL AND DRILLING BIT

All of the advantages and economies of Wire Line Coring are possible with a BJ Elliott Core Drill. The streamlined Coring Assembly is easily dropped and retrieved —the cores do not stick in the Inner Barrel which is held in position by circulation pressure. Any experienced driller can use it. Three types of heads drill and core all formations . . .

OPERATORS appreciate the savings in time and expense when good cores can be taken without removing the drilling string from the hole —

GEOLOGISTS appreciate the full-length, uncontaminated cores which are recovered at *any* depth from *any* formation —

DRILLERS appreciate the fact that little drilling time is lost, and that the Wire Line Coring Assembly drops to bottom quickly and is easily recovered after the core is taken.

ALL OF THEM approve the simplicity of design and ease of operation, with the exclusive Inner Barrel Valve which assists easy entry of the core—all of them profit from continued trouble-free performance—all of them agree that they *do* get better cores at lower cost with a BJ Elliott Wire Line Retractable Core Drill and Drilling Assembly.

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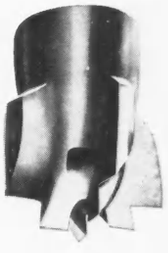
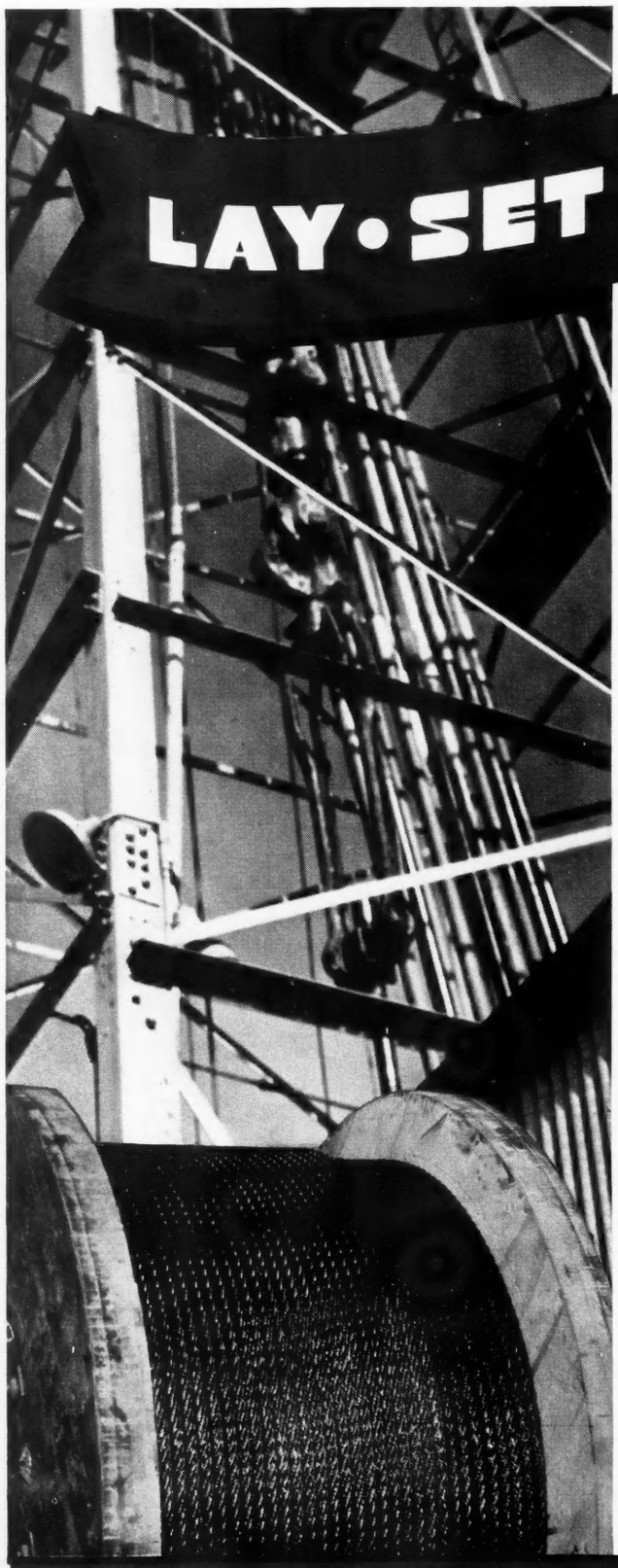
WIRE LINE RETRACTABLE CORE DRILL

BJ Elliott 3-Way Soft Formation Bit of piloted type with circulation holes close to bottom for proper cooling of reamer blades.



BJ Elliott 4-Way Soft Formation Bit. The circulation is directed to wash away cuttings so that uncontaminated cores are secured.

BJ Elliott Hard Formation Bit. Recent improvements in heat treatment enable these bits to make greatly increased footage before dulling.



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LAY-SET Preformed Rotary Lines almost refuse to whip (and therefore run true and spool smoothly) because the preforming process frees the wires from cranky orneryness due to pent-up torsional stresses. Being free of internal strain, LAY-SET lines are relaxed, limber, flexible—easy to handle. They require no seizing when cut; they string faster and easier. *All* Hazard ropes made of Improved Plow Steel are identified by the Green Strand.

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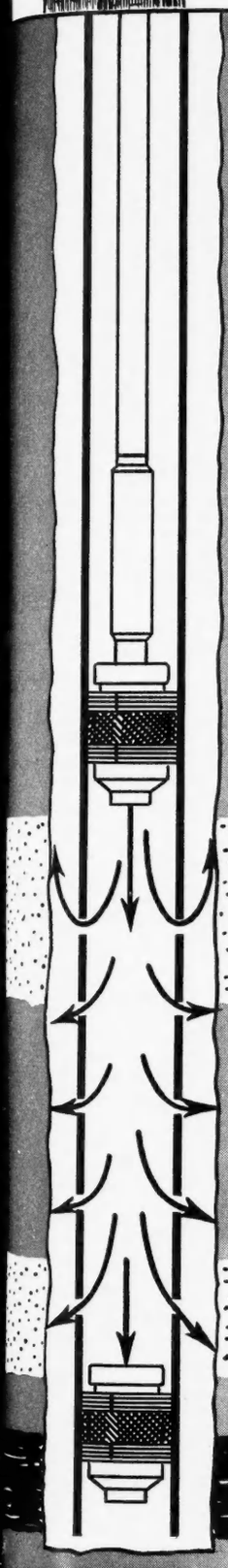

BAKER CEMENT RETAINER APPLICATIONS INCLUDE:

SQUEEZE JOBS

RE-CEMENTING

CEMENTING BEHIND SECTIONS OF PIPE

REDUCING GAS/OIL RATIOS

SERIES CEMENTING

PLUGGING OFF BOTTOM FLUIDS

PLUGGING BACK TO UPPER ZONES

TESTING UPPER CASED FORMATIONS

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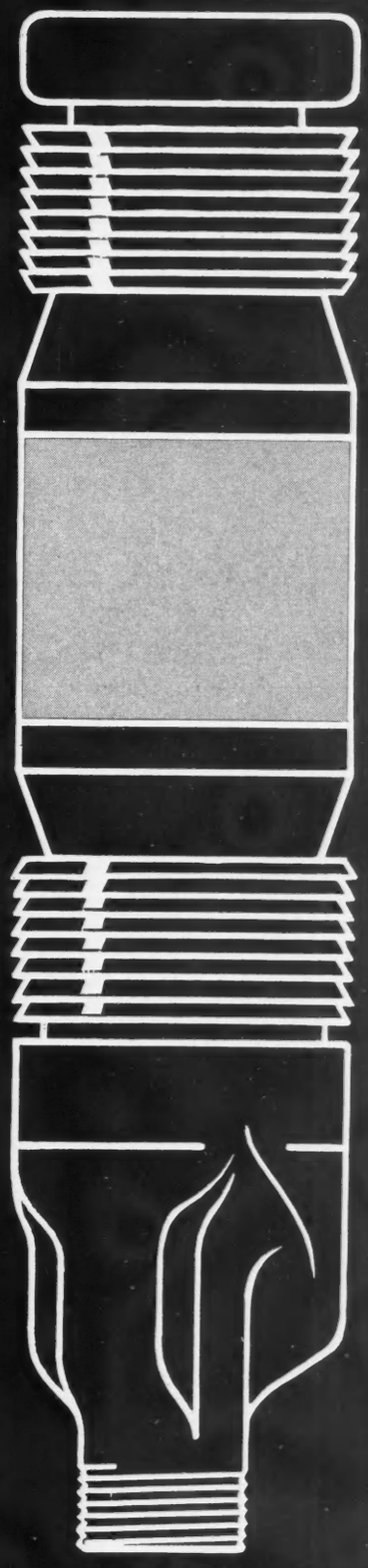

Send for Broadcast No. 17-A, giving complete details concerning this remarkable tool.

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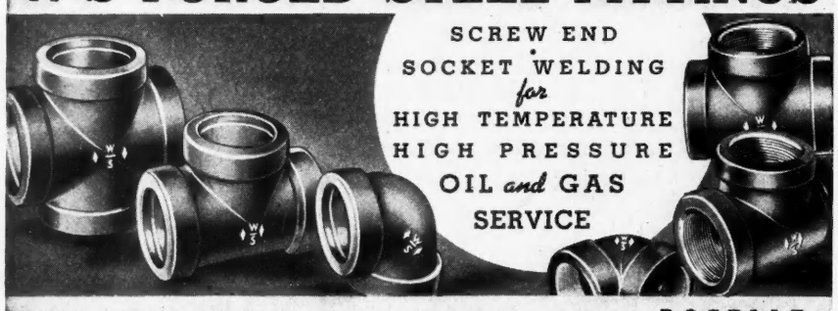
THE COMPOSITE CATALOG
OF OIL FIELD AND PIPE LINE EQUIPMENT

W-S FORGED STEEL FITTINGS



THE WATSON-STILLMAN CO. ROSELLE, NEW JERSEY

LOOKING AHEAD

WITH THE EDITOR

Oklahoma City Proves Deep Pumping Practical

NINE cents is a worthwhile goal when it represents the lifting cost per barrel of 6500-foot production. Yet this degree of efficiency has been attained in a field pumping 100,000 barrels a day.

The story of the evolution and improvement of production practices and equipment in such an area, the story of how wild wells and 50,000-barrel gushers of the field's early life have been replaced as sensation furnishers by definite forward strides in pumping engineering, is one worth the consideration of any man who has a single sucker rod on his lease.

Maybe your lifting costs have run as high as 48 cents per barrel. That's what they ran in the early pumping days of Oklahoma City. Maybe, too, you would be interested in reducing those costs to 9 cents a barrel.

If so, you will want to read an article scheduled for early publication in THE OIL WEEKLY. It tells of how a group of determined operators proved that deep pumping was a practical, practicable proposition. And it gives enough of their trial and error experiences along the route to success to make it fairly safe to hazard the prediction that some of those experiences may be applicable to your own pumping properties.

Be on the lookout for "Oklahoma City Proves Deep Pumping Practical," which will appear as No. 20 of THE OIL WEEKLY's series of pumping articles.

The OIL WEEKLY, Published every Monday. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

Mr. Daugherty discovered the way to lower pumping costs in East Texas

OTHER operators in fields such as Mexia, Freer, Pettus and Beaumont, Texas; Seminole, Oklahoma and Smackover, Arkansas, where corrosive and sand-laden fluids must be pumped, have also found that "Oilwell" DI-HARD Barrels lower lifting costs.

ARCADIA

ARCADIA REFINING COMPANY
110 South Broadway Street
Telephone 1771
TYLER, TEXAS

March 28, 1939

Oil Well Supply Company
Dallas, Texas

Gentlemen:

On September 3, 1937, we purchased and installed a DI-HARD plunger pump from you and it is still operating in a well making considerable water, never having been pulled or changed in any way. Since that time, we have been pulling out various types of plunger barrels and have been replacing them with DI-HARD barrels with combination traveling valves, and by so doing, we have cut down our pumping time and our pulling expenses to such an extent that we are now producing the oil almost as cheaply as we did during its flowing period.

I believe the DI-HARD barrel is the best that I have ever used on the west side of the East Texas field, and we are standardizing with it in the future.

Very truly yours

ARCADIA REFINING COMPANY
By Jno. R. Daugherty
Vice Pres. & Gen. Supt.

WHY "OILWELL" DI-HARD PLUNGER PUMPS AND WORKING BARRELS* PUMP MORE OIL IN LESS TIME AT LOWER COST

DI-HARD metal is extremely hard (over 900 Monotron Diamond Brinell) and takes a mirror-like finish with "Oilwell's" precision honing process. These features plus the very low coefficient of friction of the DI-HARD metal assure high efficiency and maintain it much longer than is possible with other metals. Valve cup replacement is greatly reduced in "Oilwell" DI-HARD Working Barrels and a very close fit is provided between the plungers and barrels in "Oilwell" DI-HARD Plunger Pumps.

DI-HARD metal has successfully resisted corrosion in the many types of well fluids in which these working barrels and plunger pumps have been used.

• • •

**Under an exclusive license, "Oilwell" manufactures for all oil fields throughout the world, except California, plunger pump barrels and working barrels lined with DI-HARD metal and plungers clad with this material.*

Inside and outside view of "OILWELL" DI-HARD Working Barrel. The uniform concentric reflections indicate the perfectly smooth high polish inside surface.

"Oilwell"

OIL WELL SUPPLY COMPANY

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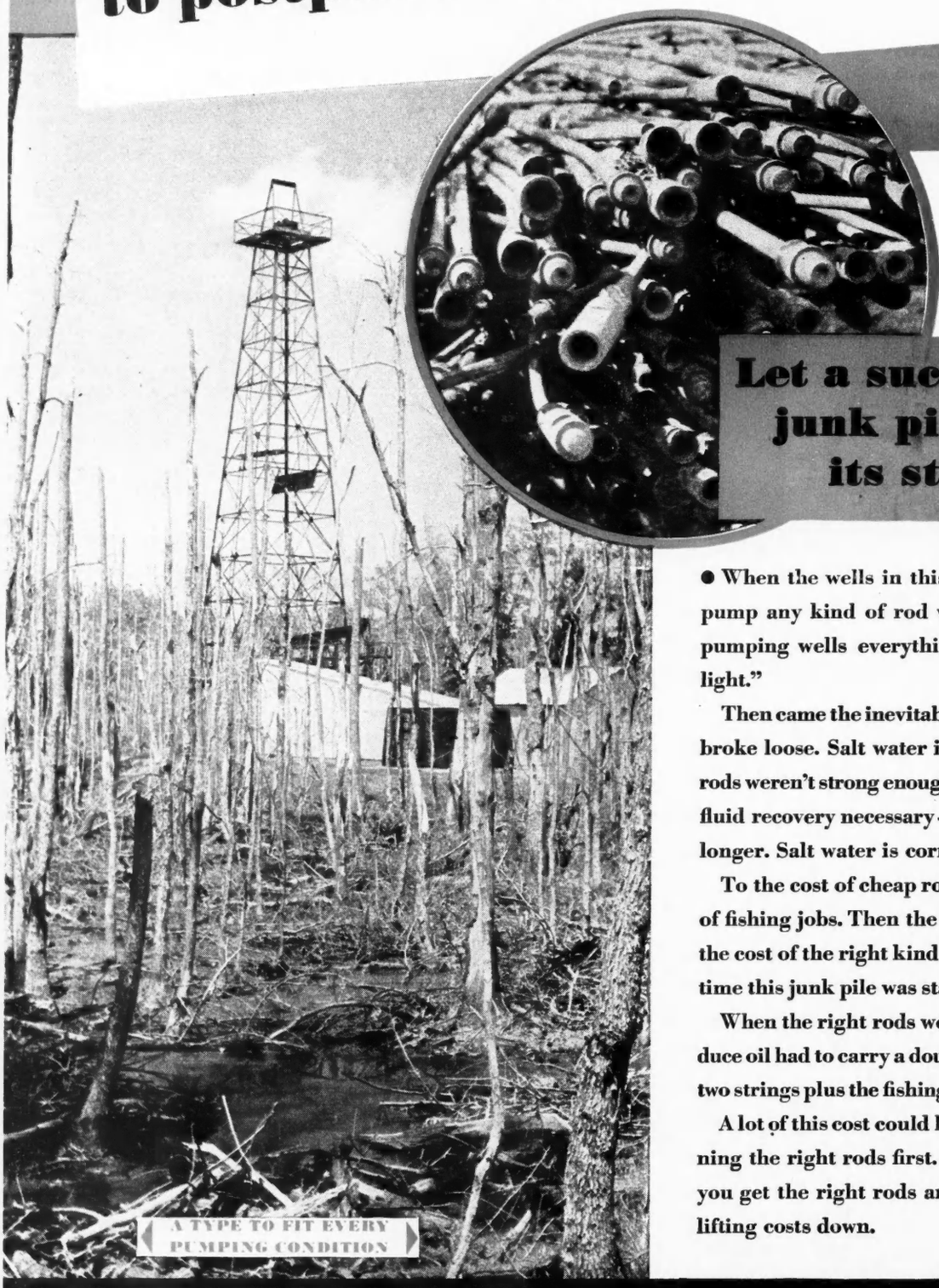
WHAT DOES IT COST

to postpone buying the right rods?



A TYPE TO FIT EVERY PUMPING CONDITION

Let a sucker rod junk pile tell its story

● When the wells in this field first went on the pump any kind of rod would do. Like all new pumping wells everything was "sweetness and light."

Then came the inevitable salt water and trouble broke loose. Salt water increased the load—the rods weren't strong enough. Salt water made more fluid recovery necessary—the rods had to pump longer. Salt water is corrosive—the rods pitted.

To the cost of cheap rods was added a number of fishing jobs. Then the total rod cost exceeded the cost of the right kind of rods. And about that time this junk pile was started.

When the right rods were run, the cost to produce oil had to carry a double load—the cost of the two strings plus the fishing jobs on the cheap rods.

A lot of this cost could have been saved by running the right rods first. Let Jones Service help you get the right rods and let Jones Rods keep lifting costs down.

JoneSuckeRods

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